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State Colorado

MINERAL REPORT

Mineral Resources of the Arkansas Canyon Planning Unit with Special Emphasis on the former Grape Creek Wilderness Study Areas and the McIntyre Hills Wilderness Study Area.

(Title)

LANDS INVOLVED

See enclosed map.

March 12, 1982
(Date)

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Abstract

A mineral resource inventory of parts of the Arkansas Canyon Planning Unit was undertaken by the Colorado State Office of the Bureau of Land Management in conjunction with the Canon City District Office of BLM.

Approximately 225 square miles were surveyed for metallogenic occurrences between Canon City and Cotopaxi. The study was completed in two parts. Barringer Resources, Inc., under contract YA-553-CTO-100, collected and analyzed 700 stream sediment samples for 25 elements. Geochemical results were interpreted by statistical processing which included factor, discriminant, multiple regression and characteristic analyses. The Bureau of Land Management examined, and (or) mapped and sampled 115 sites within the study area, taking 182 rock samples from veins, shear zones, contacts and mine dumps. The sites were combined into 40 major workings, which were evaluated for their remaining mineral potential.

The major deposit types evaluated were massive sulphide-base metal, sedimentary and magmatic uranium, thorium vein, and magmatic segregation. Geochemical analysis indicated 30 areas considered anomalous with regard to one or more of the geochemical parameters evaluated.

Evaluation of old mine workings and districts indicated total in-place reserves of base metals to be on the order of 200,000 tons, averaging 2.5% copper, 0.8% lead, and 1.15% zinc. These reserves are scattered across the study area with the largest tonnage (110,000 tons) occurring at the Green Mountain Mine.

Table of Contents

	Page
Abstract	i
Table of Contents	ii
Illustrations	iii
Tables	iv
Summary and Conclusions	vi
Introduction	1
Acknowledgements	1
Previous and Present Investigations	2
General Geology	3
Major Rock Types	5
Structure	6
Methods of Evaluation	7
Resource Estimates	8
Lode Sampling and Analytical Techniques	9
Claims and Prospects	9

Illustrations

Plates

		Page
1.	Mylar overlay showing location of prospects within study area (should be used with plates 2 and 3).	Accompanies Rep
2.	Geologic Map of the Study Area.	Accompanies Rep
3.	Base Map showing geochemical stream sediment sample sites within study area.	Accompanies Rep

Figure

1.	Index--Map Showing Locations of Areas Determined to be Anomalous Within the Survey Area.	2a.
2.	Sketch map showing survey area location.	3a.
3.	Dawson Mountain Mines (Copper King).	14
4.	Horseshoe Mine.	20
5.	El Plomo Mine.	24
6.	Columbine Mine.	28
7.	Green Mountain Mine.	34
8.	Good News Complex (Goat Park).	38
9.	Copper Girl and Valley View Claims.	43

Tables

		Page
1.	High potential areas as outline by stream sediment sample analyses	2
2.	High potential areas as outlined by lode claim evaluation	2
3.	Sample results, Dawson Mtn. Workings (Copper King)	13
4.	Sample results, Horseshoe Mine	18
5.	Sample results, El Plomo Mine	23
6.	Sample results, Columbine Mine	27
7.	Sample results, Green Mtn. Mine	32
8.	Sample results, Good News Complex (Goat Park)	37
9.	Sample results, Copper Girl and Valley View	41
10.	Sample results, Little Giant Claims	46
11.	Sample results, Yorkville Prospects	49
12.	Sample results, Cotopaxi Mine	52
13.	Sample results, Goat Park, Good News No. 2	55
14.	Sample results, Dawson Mtn. Surprise Group (Copper Boy)	58
15.	Sample results, Texas Creek Prospect	60
16.	Sample results, Titusville and Westfall Gulch Prospects	63
17.	Sample results, Gem Mtn., Pits A and B	65
18.	Sample results, Indian Springs Gulch	67
19.	Sample results, Sand Gulch (Cotopaxi Prospect)	70
20.	Sample results, Joker and Rocky Mtn. Boy	73
21.	Sample results, Adamic Cow Camp Workings	76
22.	Sample results, Old Cunac Property (Bear Nos. 1-2)	80
23.	Sample results, Morning Star Mines	83
24.	Sample results, Upper Copper Gulch	86

Tables (Continued)

		Page
25.	Sample results, Hellgate Claims Nos. 1-12	90
26.	Sample results, Marsh Gulch Prospects	93
27.	Sample results, Poverty Mtn. Road Prospect	95
28.	Sample results, Temple Canyon	97
29.	Sample results, War Dance Claims	99
30.	Sample results, S. Fremont Co. Patented Prospects	103
31.	Sample results, East Pierce Gulch	110
32.	Sample results, No. Talbert Gulch	117
33.	Sample results, Red Mtn. Prospect	119
34.	Sample results, Talbert Gulch	121
35.	Sample results, Dirty Gulch (Copper Prince)	123
36.	Sample results, West McCoy Gulch	125

Summary and Conclusions

This report was written and meant to be used in conjunction with the Barringer Resources, Inc., report on the same area. The old mining districts within the study area have some small localized ore zones that could be marginally profitable given 1980 metals prices. At current March, 1982, metals prices the entire area is considered subeconomic. Below are specific conclusions reached after property evaluation.

1. There are approximately 220,000 tons of 2.5% Cu, 1.5% Pb, 1.0% Zn, ore grade material scattered across the study area.

2. About 110,000 tons of this ore is estimated to lie within the Green Mountain shear zone.

3. There are no economical ore bodies south of Green Mountain, Horseshoe-Columbine Mine shear zones.

4. The barite in South Grape Creek is of too poor grade to be valuable.

5. The copper prospects around Cotopaxi have some potential for valuable minerals.

6. Most of the good Cu prospects in the Grape Creek Area are already patented.

7. There is evidence of a continuous shear zone from Dawson Mountain Workings (Copper King, etc., patented claims) to the Columbine Mine (a distance of 4.3 miles) that may be of some economic value. Ore grades are generally too low to be economical at this time, and the shears are narrow and tend to pinch out locally.

8. Overall the entire area has little economic potential. The mineral occurrences are small and, though locally of fairly high grade, are generally low grade in character.

9. To put the area into production would require a custom mill in the area. If all the small Cu prospects were to be brought back into operation simultaneously, the chances for economic success would still be marginal and short lived due to low grade and reserves.

10. There are possibilities for small heap leaching operations at several of the minesites. Local recovery of Cu via heap leaching would be the only viable alternative at this time, providing environmental restrictions can be met and/or overcome.

Introduction

This mineral resource investigation of the Arkansas Canyon Planning Unit was made at the request of the Canon City District Manager of the Bureau of Land Management. Within the planning unit are three Wilderness Study Areas, Upper and Lower Grape Creek and the McIntyre Hills. The objectives of the study were to obtain mineral resource data on areas that have been previously mined and to locate high potential targets in areas not previously mined, and only lightly explored.

The methods to obtain these data were twofold. First, the Bureau of Land Management contracted Barringer Resources, Inc., to conduct a geochemical-geostatistical survey of approximately 225 square miles of the P.U. The results of their effort are published as an open file report with the U. S. Geological Survey entitled Geochemical and Geostatistical Evaluation Arkansas Canyon Planning Unit, Fremont and Custer Counties, Colorado. The report, resulting from contract YA-553-CTO-100, is published in three volumes. See Plate 3, Geochemical Base Map, Figure 1, Index Map of Geochemically Anomalous Areas, p. 2a., and Table 1, page 2.

The second phase of the mineral evaluation of the Arkansas Canyon P.U. was undertaken by BLM geologists and mining engineers. Historical mining districts, mine workings, exploration pits and claim groups were mapped, sampled, and evaluated.

Herein described is the Bureau's study of the mineral resources within an area stretching east-west from Canon City to Cotopaxi and north-south from the Arkansas River to just south of the Custer County line (see Figure 2).

Most of the historical mineral production is from patented mining claims located adjacent to the Lower Grape Creek WSA. Here the main ore bodies consisted of base metal sulphides found along fault traces, some extending for several thousands of feet. Production was never great at any single location. Reserves were generally small and tended to vary in richness along strike.

All study area prospects that were examined are shown on Plate 1, the base map overlay.

Acknowledgements

The Arkansas Canyon P.U. field work was performed by Robert J. Coker 1/, Kevin Anderson 2/, and Roy Drew 3/. Assistance was provided by Roger Underwood, District Geologist, and Kenneth Smith, Wilderness Coordinator, both of the Canon City District. Assistance in preparing the mineral report was provided by William Stringer 1/.

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3/ Geologist, CSO, BLM.

TABLE 1

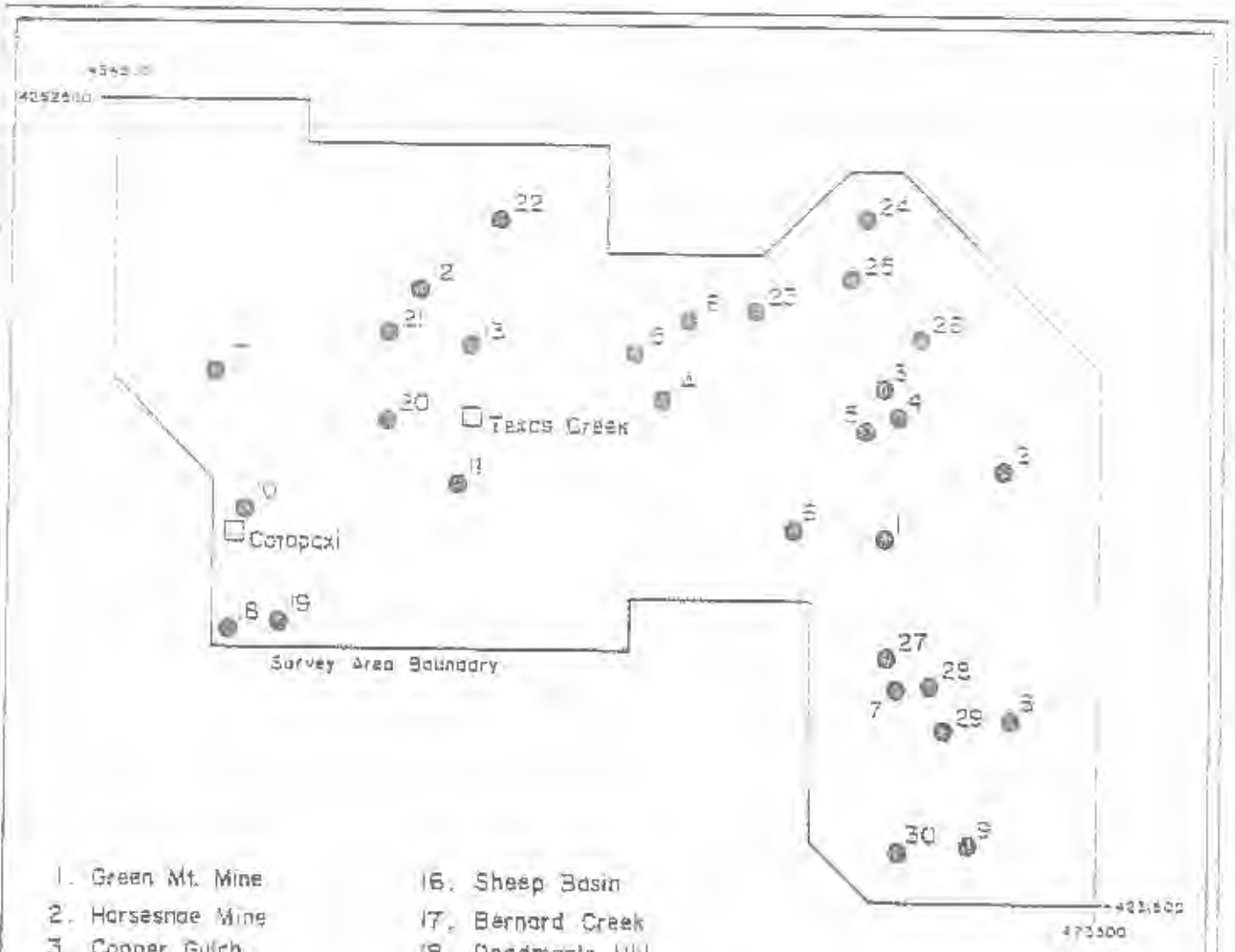
High Potential Areas As Outlined by Stream Sediment Sample Analyses

AREA	LOCATION
1. Green Mtn. Mine	E½ Sec. 26, T.19S., R.~~71W.~~ 72W
2. Copper Gulch	Unsurveyed land T.19S., R.72W.
3. Horseshoe Mine	SE¼ Sec. 16, T.19S., R.71W.
4. Goat Park	Sec. 12, T.19S., R.72W.
5. Sunset City	Sec. 8, T.19S., R.72W.

TABLE 2

High Potential Areas As Outlined by Lode Claim Evaluation

AREA	LOCATION
1. Dawson Mtn. Mines (Copper Girl)	S½ Sec. 14, T.19S., R.71W.
2. Horseshoe Mine	SE¼ Sec. 16, T.19S., R.71W.
3. El Plomo Mine	SE¼SE¼ Sec. 17, T.19S., R.71W.
4. Columbine Mine	SE¼SW¼ Sec. 17, T.19S., R.71W.
5. Green Mtn. Mine	SE¼NE¼ Sec. 26, T.19S., R.72W.
6. Good News Complex (Goat Park)	SW¼ Sec. 12, T.19S., R.72W.
7. Copper Girl and Valley View	NW¼ Sec. 14, T.19S., R.72W.



1. Green Mt. Mine
2. Horseshoe Mine
3. Cooper Gulch
4. Goat Park
5. Sunset City
6. Tolbert Gulch
7. West Mill Gulch
8. Hell Gate Gulch
9. Democrat Creek
10. Cotopaxi
11. Back Door Gulch
12. Texas Creek Gulch
13. BM 8131
14. Spring
15. Echo
16. Sheep Basin
17. Bernard Creek
18. Deadman's Hill
19. West McCoy Gulch
20. BM 6910
21. Reese Gulch
22. Peak 8254
23. McIntyre Hills
24. Parksdale Siding
25. McIntyre Gulch
26. BM 6226
27. Pine Gulch
28. Peak 7957
29. Granite Gulch
30. Titusville Gulch

FIG. 1 - INDEX MAP SHOWING LOCATIONS OF AREAS DETERMINED TO BE ANOMALOUS WITHIN THE SURVEY AREA

Previous and Present Investigations

Base metal sulphides, notably copper and zinc, are stressed in the few mineral reports available on the area. Several Bureau of Mines reports detailing the copper and zinc resources available for strategic purposes were published prior to, during and shortly after World War II. These reports emphasize the small overall reserves of the area.

Several mineral examinations are available in Bureau files resulting from patent applications. In these reports, which were cursory in nature, were outlined sufficent mineralized areas to grant patents to many of the claims along Grape Creek.

Geologic map coverage is generalized. Coverage for Fremont and Custer Counties is provided by a series of 15 minute (1:62,500) Reconnaissance Geologic Maps by Taylor, et al., (1975).

The Bureau of Land Management field team spent 40 days during September and October of 1980 examining properties within the P.U. One hundred eighty-two hardrock samples were collected from mineralized areas and mine dumps. Barringer Resources collected and analyzed 700 stream sediment samples over the 225 mile area for a sample density of 3.1 samples per square mile.

General Geology

Location

The center of the study area is approximately 12 miles southwest of Canon City, Colorado. The area is approximately twenty miles wide by twenty-five miles long in its longest dimensions, and is almost totally enclosed by the Royal Gorge and Cotopaxi, Colorado, 15' topographic quadrangles. Access is provided by U. S. Highway 50 west from Canon City, and by state, county, and private secondary and gravel roads north and south from Highway 50.

Regionally the area is located near the north end of the Wet Mountains (see Figure 2). The West Mountain Valley and Sangre de Cristo Range lie to the southwest. The Thirty-nine Mile Volcanic Field bounds the area on the north, and the Silver Cliff-Rosita Volcanic Field is nearby to the south. Sedimentary rocks of the Canon City Embayment are found near the northeast edge of the project area.

U. S. Geological Survey geologic map coverage for the area is provided by: Taylor, et al., 1975a (Royal Gorge 15' geologic quadrangle); Taylor, et al., 1975b (Cotopaxi 15' geologic quadrangle); Epis, et al., 1979 (Black Mountain 15' geologic quadrangle); Brock and Singewald, 1968 (Mt. Tyndall 7½' geologic quadrangle); and Scott, et al., 1978 (Pueblo 1° x 2° geologic quadrangle). See Figure 3, Geologic Map of the study area.

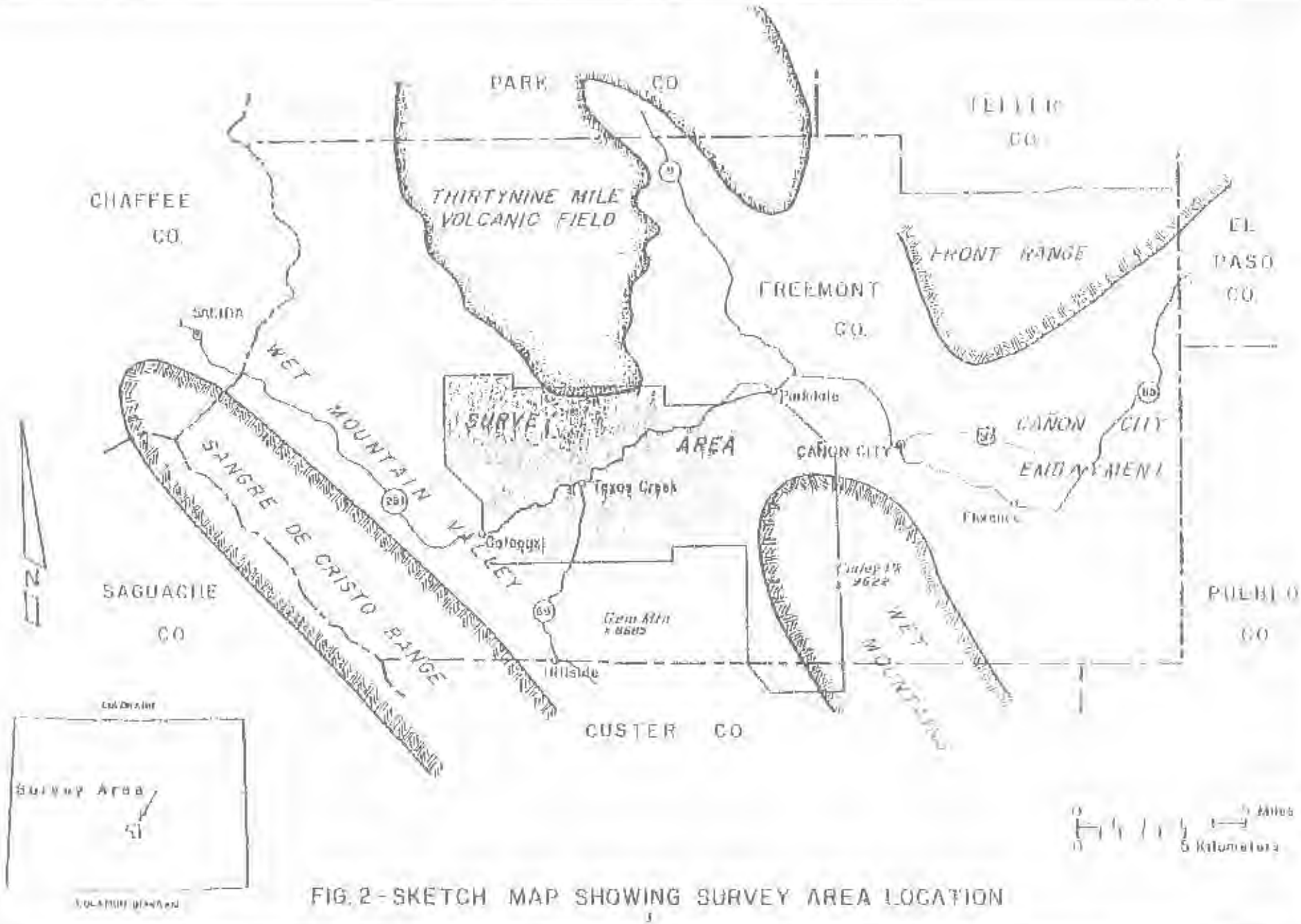


FIG. 2 - SKETCH MAP SHOWING SURVEY AREA LOCATION

Rock Units

The rock units mapped by Taylor, et al., (1975a and 1975b) represent a wide array of rock types. The 15' geologic quadrangle does an adequate job of generalizing these rock types into mappable units appropriate to 1:62,500 scale mapping. No attempt was made by the BLM or its contractor, Barringer Resources, Inc., to provide a comprehensive description of the individual rock types, except at locations where mine workings were evident or strong shows of alteration and/or mineralization occurred.

Precambrian metamorphic and plutonic rocks underlie most of the project area. The migmatic gneisses and amphibolites represent interlayered volcanic, volcanoclastic, and sedimentary rocks metamorphored to amphibolite facies (Taylor, et al., 1975a). Chalcopyrite, pyrite, and pyrrhotite occur in association with this rock type along Grape Creek at the Horseshoe Mine and at the Green Mountain Mine. Copper mineralization, in the form of oxides and carbonates, represent secondary enrichment and mineralization at various sites within the area. Fracture and shear zones with local kaolinization and hydrothermal alteration are common in north Grape Creek between Dawson Mountain and Green Mountain. Local enrichment of garnet, biotite and hornblende are indicative of metalliferous concentration throughout the Precambrian metamorphics.

The migmatic gneisses host abundant pegmatites. Field observation suggests that: 1) the pegmatites are usually conformable with foliation trends; 2) are usually unzoned consisting principally of quartz and feldspar; 3) often grade into migmatic interlayers; and, 4) are probably of autometamorphic origin.

The pegmatites within the area have been periodically mined for decorative stone, industrial minerals and aggregate. Several pegmatite mines north of Texas Creek have been patented. The main products of these operations were sodic and potassic feldspar with by-product production of rose quartz and beryl. The existing pegmatites were mapped and sampled solely for their possible metalliferous content. Evaluation was not based on intrinsic rock values for other than base or precious metals.

The gneisses have been intruded by quartz monzonite of Silver Plume Age (Yqm unit). This pluton is dated 1.45 b.y. by Rb/Sr isochrone methods (Taylor, et al., 1975b). These rocks are discordant with respect to the host gneisses.

The Paleozoic sedimentary record is fragmentary in the project area. The Manitou Limestone, Harding Sandstone, and Fremont Dolomite of Ordivician Age are present in the western part of the area. These rocks are separated by an unconformity from the Pennslyvania Minturn and Belden Formations. Thus, two erosional events are recorded in the area.

Mesozoic sedimentary rocks from the Jurassic Ralston Creek Formation to the Cretaceous Pierre Shale are preserved in the Webster Park Graben. Crosscutting relationshipps suggest that these rocks were folded and subsequently faulted before lower Oligocene time.

Tertiary rocks of the Echo Park Alluvium (Eocene) and the Thirty-nine Mile Volcanic Field are exposed in the northwestern quadrant of the study area. The history of these rocks is discussed by Epis and Chapin (1968). The volcanic history of the Rosita Hills-Silver Cliff district immediately to the south is discussed by Siems (1968). These rocks serve to date the major fault trends in the study area as post-Echo Park, pre-volcanic and are probably the result of Laramide orogenic activity.

Major Rock Types

Xgn--Migmatic gneisses of Precambrian x age (1.6 to 2.5 b.y.) composed chiefly of layered, biotite-quartz-feldspar gneiss with minor amounts of hornblende gneiss, calc-silicate gneiss, and garnetiferous-biotite gneiss. Generally brown to pink to gray-green, well foliated, fine- to medium-grained rock with localized quartz stringers and pegmatite.

Xqd--Quartz diorite of Precambrian x age (about 1.7 b.y.). Dark to gray massive to well-foliated quartz diorite. Generally grades into granodiorite. It is usually found as a mafic shell surrounding granodiorite plutons, but may occasionally form small independent plutons. It is chiefly composed of hornblende, oligoclase, biotite, microcline, and quartz.

Xgd--Granodiorite of Precambrian x age (about 1.6 b.y.). Gray, light gray to pinkish gray, massive to foliated, medium- to coarse-grained granodiorite with lesser amounts of quartz monzanite and quartz diorite. This rock unit forms plutons that are well-foliated on the margins and tend to be massive on the interior. Composed chiefly of feldspar, hornblende, biotite and quartz.

Fms--Mclure Mountain Complex (Cambrian) composed of light gray, medium-grained hornblende-biotite and nepheline syenites with nepheline-rich pegmatite segregations and dikes. Intrudes the ultra-mafic complex of black clinopyroxene-olivine gabbros found at Iron Mountain.

Fqs--Syenite Complex at Democrats Creek (Cambrian) containing a stock of light- to medium-gray, fine- to medium-grained syenite with minor amounts of quartz and olivine-clinopyroxene gabbro (Christman, et al., 1959).

Kn, Kegg, Kdp, Jmr--Upper Cretaceous and Upper Jurassic sedimentary units found in the Webster Park Graben. Composed chiefly of shale, limestone, siltstone, and sandstone. The maximum thickness of sediments in the Webster Park Graben approaches 1,770 feet.

Yqm--Quartz Monzonite of Silver Plume Age (1.45 b.y.). Light gray to pink, medium-grained quartz monzonite composed chiefly of oligoclase, microcline, quartz, biotite, and muscovite. Source of dimension stone between Oak Creek and Texas Creek.

Pmb--Minturn Formation and Belden Formation of Pennslyvanian Age. Sedimentary units dark gray to green to reddish-brown shale, siltstone, and sandstone. Contains thin limestone beds throughout. Total thickness of sediments approaches 1,900 feet pinching out on the lateral extremities.

Or--Ordivician Sediments composed of the Fremont Dolomite, Harding Sandstone, and Manitou Limestone. The units range from gray to red, are locally thinly bedded and cherty. The total thickness of the units where in place is approximately 300 feet.

Qp, Qpp -- Piney Creek and Post Piney Creek Alluvium of Upper Holocene Age. Composed of grayish brown, loosely statified sand and gravel approximately 10 feet thick along drainages of Sand Gulch and Texas Creek.

Volcanics -- Tuffs and flow tuffs of Oligocene Age found in the Thirtynine Mile Volcanic Field. The tuffs are generally gray to yellowish-gray ash-flow tuffs containing sanidine, biotite, pumice lumps and occasional quartz. The Thirtynine Mile Andesite is the lower member of Oligocene Age. It is composed of dark green to gray olivine andesite and is as much as 700 feet thick.

Structure

Faults

The study area is cut by predominantly northeast and northwest trending faults. The faults are generally high angle normal and reverse in nature, often continuous over several miles. The Isle Fault, a major north-northeast trending fault, forms the western boundary of the Webster Park Graben. Several major mine workings are located within close proximity to the Isle Fault, notably the El Plomo and Columbine.

Other major fault systems are found at Texas Creek and Cotopaxi. A lineament study indicates that most major workings are found at or near the proximity of fault intersections. The Green Mountain Fault, though comparatively short, is indicative of the type of fault controlled mineralization found within the study area.

All Cretaceous and older rock units are faulted. The Echo Park Alluvium is cut by several north and northeast trending faults. The Thirtynine Mile Volcanic Field is not cut by either fault set. This indicates that that latest period of faulting occurred post-Eocene but pre-Oligocene.

Folding

Folding is not a predominant feature of the study area. Several minor folds have been mapped by Taylor, et al. (1975) in the migmatic gneisses found near Dead Mule Gulch, Poverty Mountain, and the McIntyre Hills.

The Cretaceous rocks of the Webster Park Graben display open and overturned folds. The folds trend north-northwest, parallel to the long axis of the graben. These folds are offset by a set of northeast trending faults. There formation is probably related to the graben faulting dating them as post-Cretaceous, but pre-Eocene (Weiland, et al., 1981).

Foliation

The foliation observed in Precambrian schists and gneisses trends generally east to northeast. Foliation is well defined in the migmatic gneisses and granodiorites. Dip of foliation is variable from vertical to 30° toward the north, but generally very steep.

Foliation is not nearly as well defined in Precambrian Y quartz monzonites and Cambrian syenites. This suggests that the regional metamorphism took place during Precambrain X time (Weiland, et al., 1981).

Lode Deposits

Workings were found principally in altered biotite gneisses and along major and minor shear zones. Mineralized zones contained locally abundant copper, lead, and zinc. Copper was most often found as malachite and azurite with some chalcopyrite. Chalcanthite, a soluable copper precipitate, was in evidence in many old workings.

Workings were grouped into 39 properties in this report. Emphasis is placed on base metal mineralization, predominantly copper. Resource estimates were based on the entire strike length of each deposit and up to onehalf the strike length up and down dip.

Most prospecting occurred on gossan zones, or on minor copper-bearing shear zones and geologic contacts. Mineralized zones rarely exceed 3 feet in width. The exceptions are the Green Mountain shear zone (up to 10 ft.), the shear zone from Dawson Mountain to the Columbine Mine (c. 5 miles in length, with widths to 12 ft.) and local occurrences in the Cotopaxi area. Occasionally, quartz veins are associated with the mineralized structures. The quartz veins occur as secondary fracture filling and may carry malachite, azurite, chalcopyrite, and galena.

Individual properties are described in detail in the Claims and Prospects section.

Methods of Evaluation

Published and unpublished literature and BLM records were examined to determine claim locations, geology, history, and production. Plats for surveyed prospects were obtained from the Bureau of Land Management. Local residents provided helpful information about some claims.

Sparse vegetation in the study area reduced the possibility of overlooking workings, but the lack of prominent geographic features in certain areas lead to vague and confusing claim location descriptions, and many prospects could not be identified by name.

Resource Estimates

Resources have been classified according to the following definitions (36) in this report:

Resource--A concentration of naturally occurring solid, liquid, or gaseous materials in or on the Earth's crust in such form that economic extraction of a commodity is currently or potentially feasible.

Identified resources--Specific bodies of mineral-bearing material whose location, quality, and quantity are known from geologic evidence supported by engineering measurements with respect to the demonstrated category.

Reserve--That portion of the identified resource from which a usable mineral and energy commodity can be economically and legally extracted at the time of determination. The term ore is used for reserves of some minerals.

Measured--Reserves or resources for which tonnage is computed from dimensions revealed in outcrops, trenches, workings, and drill holes and for which the grade is computed from the results of detailed sampling. The sites for inspection, sampling, and measurement are spaced so closely and the geologic character is so well defined that size, shape, and mineral content are well established. The computed tonnage and grade are judged to be accurate within limits which are stated, and no such limit is judged to be different from the computed tonnage or grade by more than 20 percent.

Indicated--Reserves or resources for which tonnage and grade are computed partly from specific measurements, samples, or production data and partly from projection for a reasonable distance on geologic evidence. The sites available for inspection, measurement, and sampling are too widely or otherwise inappropriately spaced to permit the mineral bodies to be outlined completely or the grade established throughout.

Demonstrated--A collective term for the sum of measured and indicated reserves or resources.

Inferred--Reserves or resources for which quantitative estimates are based largely on broad knowledge of the geologic character of the deposit and for which there are few, if any, samples or measurements. The estimates are based on an assumed continuity or repetition, of which there is geologic evidence; this evidence may include comparison with deposits of similar type. Bodies that are completely concealed may be included if there is specific geologic evidence of their presence. Estimates of inferred reserves or resources should include a statement of the specific limits within which the inferred material may lie.

Resources for vein deposits were determined by multiplying length by average width by depth. The upward or downward dip projection is assumed to extend at least one-half the measured length, and the average grade is assumed to be consistent with values of the samples.

Lode Sampling and Analytical Techniques

Definitions of types of lode samples in this report are as follows:

Chip--A series of continuous rock chips across a vein, structure, or exposure.

Random chip--Chips of rocks taken at random intervals from an apparently homogeneous exposure.

Grab--An unselected assortment of rock pieces from a stockpile or dump.

Select--Hand-picked material of either the highest grade rock available or possibly the unmineralized fraction.

Lode workings were mapped and sampled, and samples were taken from both mineralized and apparently barren material. Chip samples averaging about one pound per foot were taken across altered or mineralized structures. If structure was not apparent, random chip samples were collected from the outcrop. Selected material was taken from the dumps of caved workings to represent maximum values present. Low assay values of the richest material indicate a low economic potential.

Claims and Prospects

Each prospect that was sampled, field mapped and evaluated is detailed in this section. All prospects do not contain a surface or underground map of their respective areas. The most important mine workings are field mapped and those maps included herein.

Name:

Dawson Mountain Workings (Copper King and Other Patented Claims).

Base Map No.:

7.

Location:

S½, Sec. 14, T. 19 S., R. 71 W.

Elevation:

7,000 ft.

Access:

5 miles SW of Canon City on Temple Canyon Road, a well-maintained gravel road, then 1.5 miles SW on a 4-wheel drive dozer road to the claim group.

Land Status:

The workings are patented mining claims with the exception of the SAM 1-15 lode claims, located 2/12/77 by Pacific Coast Mines, Ltd.

Geology of Deposit:

Rock types present include fine-grained granites to the north of the workings with a poorly to well defined contact with low-grade metamorphics in the vicinity of the mines. Low-grade metamorphics include chlorite and biotite-rich schists containing secondary malachite as fracture fillings. Sub-altered zones of slightly kaolinized schist are present along fracture planes and minor faults. Biotite gneisses found in close association with the schistose rock generally are high in silica, occasionally bearing vein quartz stringers traceable for several feet on strike. Foliation is generally SW and dipping steeply between 60° and 75°SE.

Development:

This group consists of 2 shafts (150 and 65 ft. deep) and 3 adits. The main working is designated adit 1. Adit 1 consists of approximately 240 ft. of drift and crosscuts. The main drift is driven 100 ft. on a N56E striking shear zone of altered biotite schist. The 1st left crosscut extends 80 ft. SE and intersects shaft 1 on the 50 ft. level. The 2nd left crosscut is approximately 18 ft. long and bears due south. The 1st right crosscut is driven 45 ft. in a N60W direction.

Adit 2 is driven 46 ft. in altered biotite gneiss on a N62E orientation. An overhand stope has been developed at 33 ft. that has a maximum height of 12 ft. An underhand stope 17 ft. deep and timbered was developed at the same location. Both stopes are approximately 18 ft. long.

Adit 3 was not mapped due to poor back conditions. It strikes N45E and extends approximately 50 ft. from the portal in a weak chloritized schist.

Sampling:

Fourteen samples were taken throughout the various workings. Nine continuous and random chip samples were taken across the shear and alteration zones in all the underground workings. Five grab samples were taken across the dumps of each of the five underground workings.

Reserves and Property Potential:

Some potential ore grade material exists near sample site 14 in adit 1 and near sample site 17. The stoped area in adit 2 still contains some marginal ore grade material. Approximately 100 tons of marginal material remains in the stoped area of adit 2.

History and Production:

The mine was known as the Copper King property. A total of 611 tons of ore was shipped according to USBM records between 1901-1908. The ore averaged 61 pounds Cu and 0.09 oz. Au per ton.

Conclusions:

This property appears to have limited potential as expressed by the current exposed workings. Relatively rich copper lenses do occur with minor amounts of precious metals that may be extracted as by-products. The lack of a custom mill or smelter in the area greatly reduces the property potential even if larger bodies of ore grade material are discovered.

Table 3. Sample Results, Dawson Mountain Workings (Copper King)

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-14	Cont. Chip	2.5	Zone of altered biotite schists, some local quartz inclusions.	.11	1.5	1.2	.23	0	$ 83.70
S-15	do	3.5	Copper stained schist.	0	.44	.32	0	.04	9.52
S-16	do	3.0	Heavily Cu stained fractured vein quartz and thin malachite bearing biotite schist.	.04	.51	1.2	0	.04	42.30
S-17	do	3.0	Altered biotite schist bearing abundant streaks of malachite.	.04	.6	2.5	0	.07	64.00
S-18	Random Chip	0	Some Fe stained biotite schist which grades into granodiorite.	.06	.1	.34	0	.07	33.44
S-19	Random Grab	0	Dump material consisting of granites and gneisses.	.01	.3	.40	0	.04	13.90
S-20	do	0	Dump material consisting of granites and granodiorites.	0	.4	1.1	0	.03	23.60
S-21	Cont. Chip	1.5	Altered biotite gneiss with minor secondary copper and thin quartz stringers.	0	.4	.15	0	.05	6.40
S-22	Cont. Chip	1.5	Altered biotite schist containing streaks of malachite.	.03	.3	3.4	.14	0	70.90

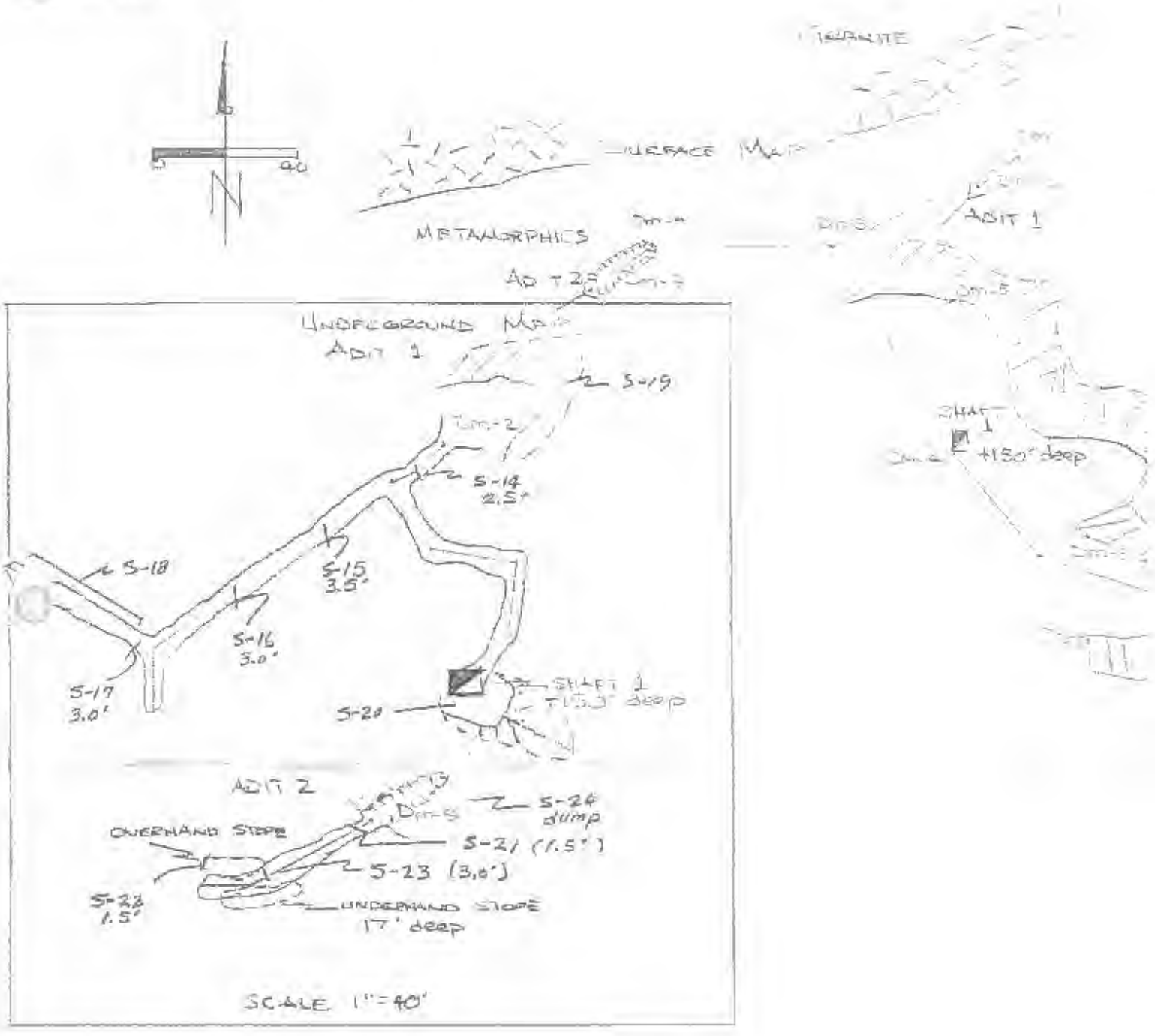
Table 3 Cont'd. Sample Results, Dawson Mountain Workings (Copper King)

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-23	do	3.0	Highly altered biotite gneiss coated with malachite.	.04	.5	4.4	0	.35	$ 93.40
S-24	Random Grab	0	Copper coated schists and gneisses.	0	0	1.1	0	.08	17.60
S-25	do	0	Dump sample from adit 3.	0	.2	.06	0	.01	2.96
S-26	Cont. Chip	3.0	Alternating zones of weathered rhyolite and chloritic schist.	0	.1	.13	0	.02	3.08
S-27	Random Grab	0	Dump of shaft 2.	0	.1	0	0	.02	1.00

FIGURE 3

JENSON MIN. WORKINGS (COPPER KING)
SW/4 SEC 14, T19S, R71W
FREMONT COUNTY, CO
COKER, DE HENGHT- ANDERSON
9/11/80



Name:

Horseshoe Mine

Base Map No.:

5.

Location:

SE¼, Sec. 16, T. 19 S., R. 71 W. - This property is located on State section 16, immediately south of Grape Creek.

Access:

7 miles SW of Canon City on Temple Canyon Road, a well-maintained gravel road, then upstream 1½ miles along Grape Creek to the Horseshoe Mine.

Land Status:

This property is located on State section 16.

Geology of Deposit:

A series of granite gneisses, chlorite schists, pegmatites and biotite schists trending N65-75E compose the hanging and footwalls of the Horseshoe Mine. The sulphide bearing zone lies at or near the contact, separating rock predominantly of volcanic origin on the footwall from dominantly sedimentary units to the south (hanging wall). The immediate wall rocks of the ore zone are generally enriched in biotite, garnet and actinolite. Epidote is found occasionally.

The structure at the Horseshoe Mine is generally uncomplicated. The major fault trending ENE-WSW is cut occasionally by small local shears. There is evidence of some minor folding superimposed on the NE trending nearly vertical metamorphic rocks. The cross faults and folds are approximately north-trending and only disrupt the area-wide foliation orientations locally.

The sulphide assemblage contains basic iron and copper sulphides with small stringers of galena with specular hematite present along the hanging wall contact.

Development:

This group consists of 3 access shafts, 3 adits and two large open stopes. Shaft 1 is the main access for stope 1. Stope 1 strikes N82E and dips 62°SE. The depth is 75 ft. along dip. The length varies from 15 ft. at the bottom to nearly 100 ft. at 20 ft. from the surface. Barren pillars support the stope. Stope width varies from 6 to 8 ft.

Shaft 3 is poorly timbered and inaccessible. It dips at 75°SE. The shaft lies on the Horseshoe fault S58W from shafts 1 and 2.

Adit 1 is a 20 ft. prospect bearing S65W.

Adit 2 is the lower access to stope 2. It was driven on a S20E bearing for 73 ft. Drifts are driven N85E for 95 ft. and S70W for 130 ft. Both drifts have been backfilled and showed evidence of being underhand stoped.

Adit 3 is the upper access for stope 2. It was driven S3W for 26 ft. A drift bearing S64W for 19 ft. along the main structure appears to be development for the next stope.

Stope 2 strikes S75W along the Horseshoe fault and dips 69°ESE. The stope length is 65 ft.; width varies from 4 to 8 ft. The stope is open to the surface with a single rock pillar for support.

Sampling:

Sample 34--6 ft. continuous chip sample, 10 ft. from the bottom of stope 1. Hard biotite-rich gneiss containing finely disseminated pyrite crystals with malachite staining near the hanging wall.

Sample 35--6 ft. continuous chip sample 25 ft. from the bottom of stope 1. Pyrite rich quartz-biotite gneiss grades to a biotite schist near the hanging wall.

Sample 36--5 ft. continuous chip sample from the northeast wall of stope 1, approximately 25 ft. from the top. Rock is a very hard biotite-rich gneiss, iron stained with some feldspar inclusions (pegmatitic).

Sample 37--3 ft. continuous chip sample across a biotite rich shear zone in adit 1. The hanging wall is highly altered with some copper staining present. The footwall grades to a coarse-grained granite.

Sample 38--4 ft. continuous chip sample across highly weathered shear zone of gossan and copper stained kaolinized schist at collar of shaft 1.

Sample 39--4 ft. continuous chip sample across the back of the 1st right drift of adit 2. Rock is biotite schist with some thin pyrite stringers and malachite staining in fractures.

Sample 40--5 ft. continuous chip sample across the back of 1st left drift 35 ft. from adit 2 crosscut. Rock is a biotite schist which grades into an iron-stained granite.

Sample 41--3 ft. continuous chip on SW wall halfway up stope 2. Sample is cut in a hard metallic zone, heavily Fe stained on the surface. Metallic zone (gahnite) locally 2½-3 ft. thick, but quickly pinches out. Kaolinized schist found at the hanging wall.

Sample 42--6 ft. continuous chip sample across the NE side of stope 2 in a biotite gneiss and zinc sulphide (gahnite). The sulphide zone is ±1 ft. thick.

Sample 43--4 ft. continuous chip sample across face of 1st right in adit 3. Rock is mostly biotite gneiss with some gahnite (zinc spinel).

Sample 44--5 ft. continuous chip sample located 5 ft. from the top of stope 2 on the SW wall. Cut in altered iron rich gneiss and veinlets of gahnite, limonite after pyrite and chalcopyrite.

Mine Reserves:

Samples showing a value of $90/ton are considered to be ore grade material. Samples 41 and 44 in stope 2 and sample 34 at the bottom of stope 1 are considered ore. Reserves are small (less than 500 tons) in place. Additional development and/or drilling could outline further reserves of high-grade (gahnite) ore.

Production History:

The Horseshoe Mine recorded production during the war years of 1943 to 1947. A total of 6,632 tons of ore material was produced. The average grade was 0.01 Au, 0.29 Ag, 0.27% Cu, 1.02% Pb, 2.76% Zn. The value per ton of this ore at today's metal prices would be $41.94/ton.

Conclusions:

The Horseshoe Mine has a limited amount of potential due to the lensoid characteristics of the ore body. High-grade pockets of zinc ore and lead sulphide have occurred in the past. It is reasonable to assume that additional ore could be delineated along strike or at depth. The mine is in good shape, requiring very little rehabilitation. A custom mill would have to be constructed and the concentrate shipped to Asarco's lead-zinc smelter.

Transportation costs are high further limiting the economics of this property. Unless large quantities of ore grade material are discovered between the Dawson Peak area and Green Mountain Mine, it is probable that the Horseshoe could never be economically reopened.

Table 4. Sample Results, Horseshoe Mine

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-34	Cont. Chip	6.0	Across biotite gneiss with finely dissiminated pyrite and malachite.	N	0.6	0.30	1.2	12.5	$107.90
S-35	do	6.0	Across pyrite rich qtz.-biotite gneiss grading to biotite schist.	N	0.4	0.25	0.44	3.1	21.70
S-36	do	5.0	Hard Fe stained gneiss with feldspar inclusions.	N	0.5	0.10	0.46	1.2	15.00
S-37	do	3.0	Altered biotite schist grading to coarse-grained granite.	N	0.6	0.26	0.59	1.9	23.50
S-38	do	4.0	Weathered shear zone of gossan and Cu stained gouge.	Tr.	1.7	0.19	4.6	1.0	56.20
S-39	do	4.0	Biotite schist with thin pyrite stringers and malachite staining.	Tr.	0.3	0.43	0.13	0.20	9.90
S-40	do	5.0	Biotite schist grading into Fe stained granite.	N	0.9	0.09	0.11	0.12	9.00
S-41	do	3.0	Across rich gahnite zone that rapidly pinches out on strips.	0.01	0.5	0.77	N	12.5	110.30
S-42	do	6.0	Biotite gneiss and gahnite.	N	0.6	0.15	0.7	2.5	25.90

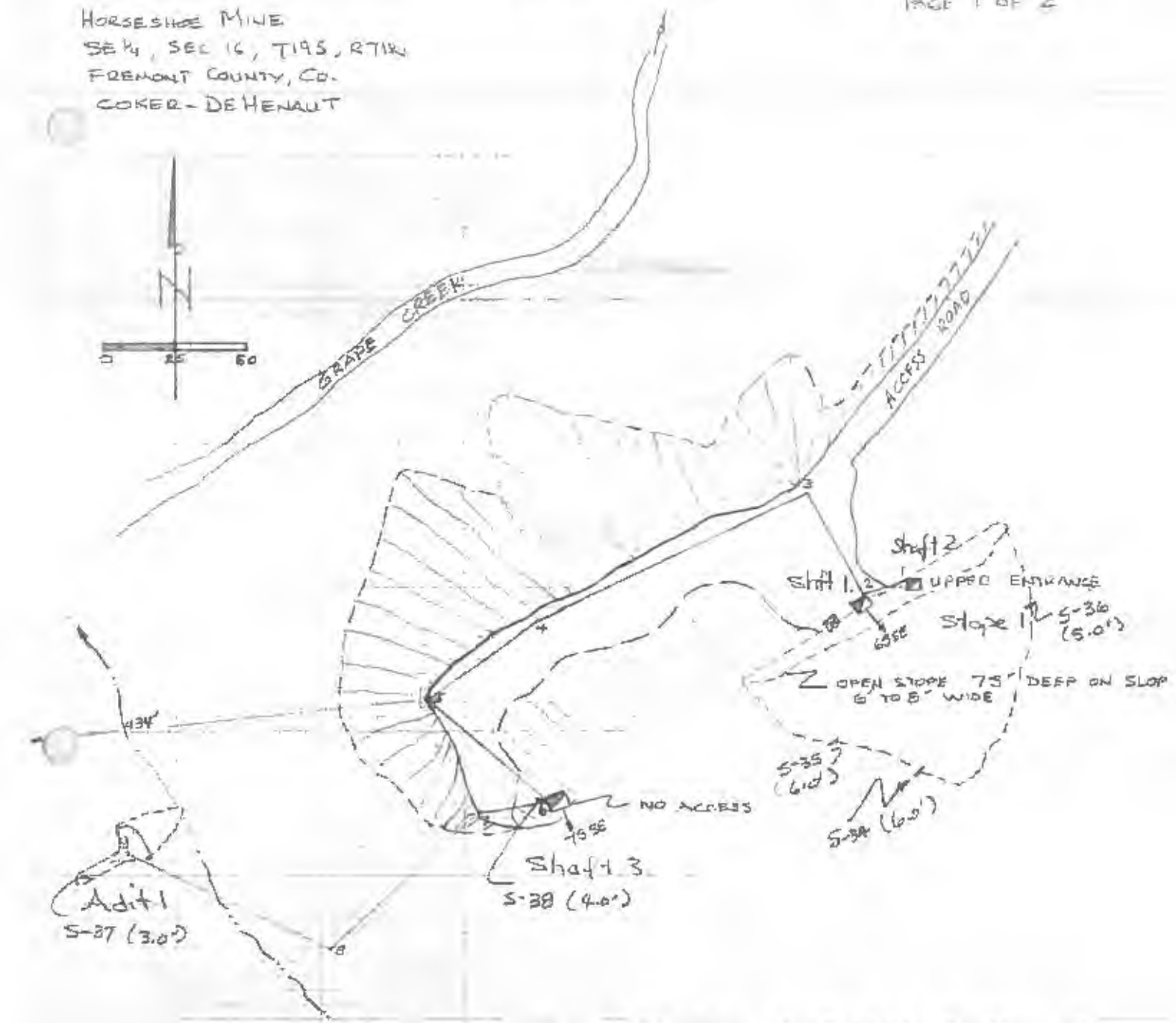
Table 4 Cont'd. Sample Results, Horseshoe Mine

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-43	Cont. Chip	4.0	Across biotite gneiss and gahnite (zinc spinel).	N	0.3	0.28	N	5.2	$ 43.90
S-44	do	5.0	Across Fe stained gneiss and veinlets of gahnite, limonite and chalcopyrite.	N	0.9	0.37	0.16	10.8	90.50

FIGURE 4

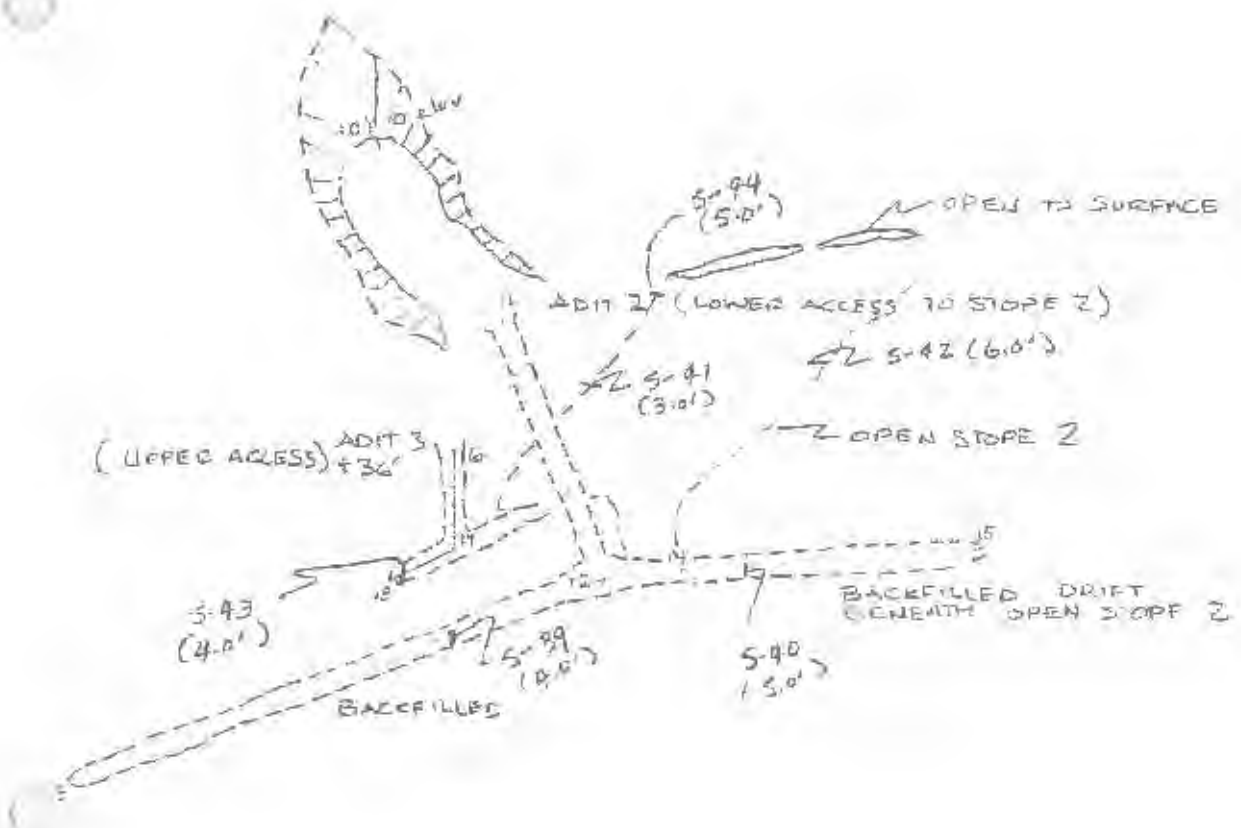
HORSESHOE MINE
SE¼, SEC 16, T19S, R71W
FREMONT COUNTY, CO.
COKER - DEHENAULT



COUNTRY ROCK – GRANITIC GNEISSES, POORLY TO WELL FOLIATED, CHLORITE-RICH, BIOTITE-RICH SCHISTS

SHEAR ZONE – SHEARS ARE GENERALLY BIOTITE RICH SCHISTS WITH Cu OXIDE STAINING IN FRACTURES.

ORE ZONE – THE SULPHIDE ZONE CONTAINS BASIC IRON, Cu AND Zn SULPHIDES WITH SPECULAR HEMATITE PRESENT ALONG THE HANGING WALL CONTACT.


S-44
(5.0')
OPEN TO SURFACE
ADIT 2 (LOWER ACCESS TO STOPE 2)
S-42 (6.0')
S-41
(3.0')
OPEN STOPE 2
(UPPER ACCESS) ADIT 3
+36'
S-43
(4.0')
S-39
(4.0')
S-40
(5.0')
BACKFILLED DRIFT
BENEATH OPEN STOPE 2
BACKFILLED

Name:

El Plomo (Patented).

Base Map No.:

3.

Location:

SE¼SE¼, Sec. 17, T. 19 S., R. 71 W.

Elevation:

6,600 ft.

Access:

7 miles SW of Canon City on Temple Canyon Road, a well-maintained gravel road, then upstream on Grape Creek 2½ miles to the El Plomo Mine.

Land Status:

The mine is located on a patented claim surrounded by public domain. The claim lies within the northern part of the Grape Creek WSA.

Geology of Deposit:

The drainage up to the workings is filled with chalcopyrite rich float and some massive sulphides in place. The country rock is fine-grained granite to quartz monzonite to biotite rich gneiss. Foliation is generally NE. Faulting is not common. The sulphide zone is more or less continuous from El Plomo to Jennings Gulch. The gossan zone in which the workings are driven strikes NNE and dips to the SE. The gossan is iron stained, weathered biotite schist. The workings are lined with chalcanthite (Copper precipitate). The geology and structure are very similar to other locations on the same sulphide zone, having remnant pyrite cubes and chalcopyrite.

Sampling:

Sample 46 is a 3 ft. continuous chip sample taken across hard, brittle iron stained gneiss at the face of adit 1. Secondary copper (chalcanthite) covered the surface. The gossan zone, on which the adit was driven, pinched out 0.5 ft. from the face.

Sample 47--2 ft. continuous chip sample across the junction of the gossan zone and foliation of biotite gneiss 5 ft. in from the portal. The gossan zone dips 50SE.

Sample 48--3 ft. continuous chip sample across the face of adit 2 in iron stained gneiss. Abundant weathered pyrite cubes are dissiminated throughout the gneiss. Some chalcopyrite is visible in hand samples.

Mine Reserves:

The El Plomo Mine may have as much as 250 tons of an average $68/ton low-grade ore in place. This tonnage was calculated between the two adits with an average thickness of 3 ft. Additional drilling and/or development would be required to delineate potential reserves.

Production History:

There is no recorded production for this property.

Conclusions:

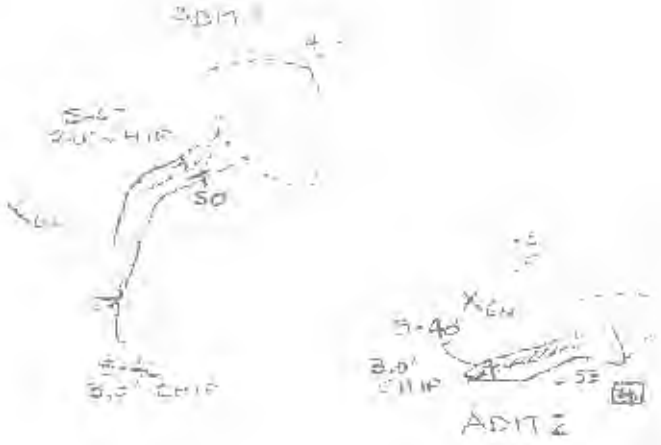
The El Plomo claim and adjacent area has limited potential as a copper-zinc ore body. The drainage has undeveloped massive sulphides exposed. The gossan zone on which the workings are driven can be followed along strike for short distances. It is seen to pinch and swell along the Grape Creek fault. There is a possibility that ore grade material is present at depth.

As with other properties found along this fault zone, transportation and milling costs are extremely high. The low tonnages and relatively low values of ore indicate a very limited potential for exploitation.

Table 5. Sample Results, El Plomo

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-46	Cont. Chip	3.0	Across hard Fe stained gneiss covered with chalcanthite and bearing stringers of gahnite.	N	0.7	0.89	N	8.7	$ 82.10
S-47	do	2.0	Across gossan and biotite gneiss.	N	0.6	0.96	N	0.71	21.40
S-48	do	3.0	Across Fe stained gneiss with abundant weathered pyrite cubes.	N	0.8	0.74	0.11	4.9	54.10



DRAINAGE FILLED W/ SHALLOW PYRITE RICH FLOAT

SOME MASSIVE [illegible] IN PLACE

CA STAIN ON GRANIT IN MAIN STREAM CHANNEL

GOSSAN FILLED SHEAR ZONE CONTAINING SMALL RELICT [illegible] QUEFS SHEAR FOLIATION HANGING WALL AND VARIES IN THICKNESS FROM 3-5' MAX TO >1" AT THE FACE. SOME CHALCOPYRITE

WASTE ROCK IS AN FE STAINED BIOTITE RICH GNEISS. CU PRECIPITATE HAS FORMED ON THE INSIDE OF THE DRIFTS.

BOTH ADITS ARE DRIVEN ON A SULPHIDE RICH SHEAR ZONE THAT IS MORE OR LESS CONTINUOUS FROM JENNINGS GULCH EAST OF THE HORSESHOE MINE. MORE EVIDENCE OF SULPHIDE MINERALIZATION WAS FOUND IN THE DRAINAGE THAN IN EITHER WORKINGS. THE WORKINGS ALSO CONTAINED A SMALL SHAFT (NOW CAVED) NEAR ADIT 2

Name:

Columbine Mine.

Base Map No.:

9.

Location:

SE¼SW¼, Sec. 17, T. 19 S., R. 71 W.

Elevation:

7,200 ft.

Access:

South from Parkdale on Copper Gulch Road 11 miles, take northwest fork of the road 1½ miles, then turn south 1 mile to Marsh Gulch drainage. Proceed 2 miles up the drainage. The property is then ¼ mile to the east.

Land Status:

Federally-controlled surface and minerals.

Geology of Deposit:

The workings are in a brecciated shear zone up to 3 ft. wide with altering bands of iron-stained, biotite-rich schist and minor bands of fine-grained, biotite-rich granite. Thin gossan veins run at generally right angles to the main shear but this varies along the drift. Some minor sulfide zones occur along the shear zone contact with banded gneisses and granitic country rock. Pyrite, chalcopyrite, and some minor copper are in evidence.

Development:

Workings consist of two trenches and a shaft complex with a dump. Trench 1 is 18 ft. wide by 76 ft. long bearing N55E and terminates at flooded shaft 1. Shaft 1 connects with the lowest level in the workings.

Trench 2 is offset 8 ft. NW of shaft 1 and bears N60E for 16 ft. terminating at flooded shaft 2, 17 ft. down from surface level.

Shaft 3, due east of shaft 2, has a well-timbered drift 100 ft. long bearing due east. At 72 ft. from the portal, a flooded winze, 12 ft. deep provides access to two lower levels. The lowest level is completely flooded and inaccessible. The lower level is accessed by all the shafts and the winze.

Sampling:

Of the six samples taken, five were continuous chip cut samples taken in the shaft complex across shear and alteration zones. One random grab sample was obtained from the dump at shaft 3.

Reserves and Property Potential:

The Columbine Mine has a dominant shear zone striking due east, averaging 3.0 ft. wide. The rock has an in-place value of $27.26 per ton. Approximately 3,900 tons are blocked out. The shear zone is possibly the western most extension of the Horseshoe-El Plomo massive sulphide zone. Zinc values are proportionately higher here than along the eastern extension of the sulphide zone. Rock values are much too low to be of economic importance.

History and Production:

The Columbine Mine was opened in the mid-1940's. There are no production records or ore grade reports available.

Conclusions:

The importance of this mine is its location. The massive sulphide zone beginning near Dawson Mountain ends near the Columbine Mine. The mine has no real potential with its present blocked-out rock values.

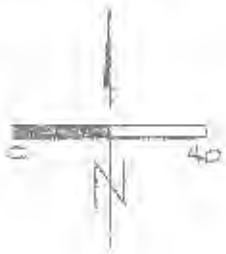
Table 6. Sample Results, Columbine Mine

[N, Not Detected; Tr, Trace]

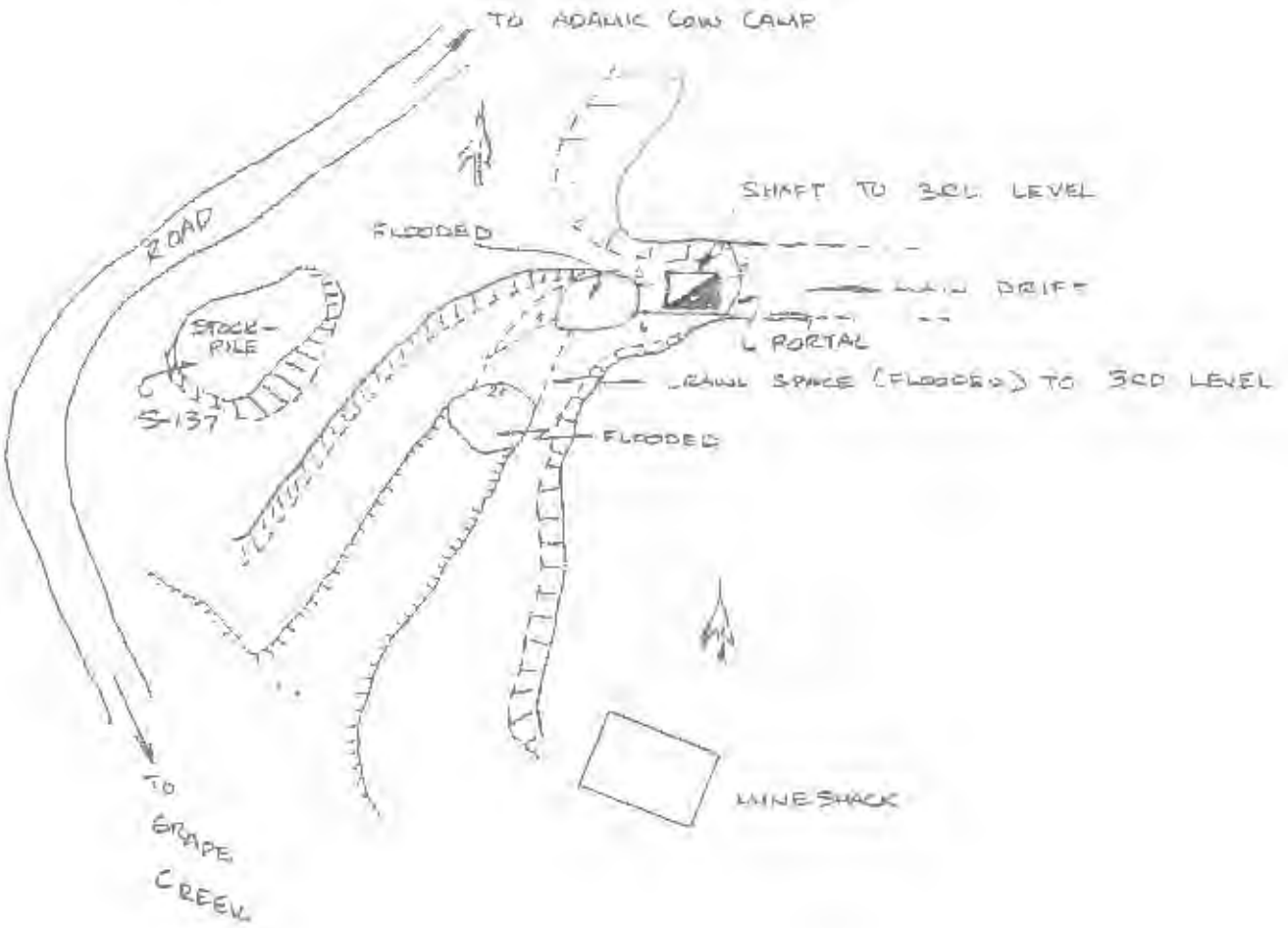
Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-132	Cont. Chip	3.5	Across shear zone of Fe stained biotite rich schists and gneisses.	0.01	0.4	0.5	0.2	0.85	$ 16.50
S-133	do	2.0	Biotite rich schists containing isolated occurrences of chalcopyrite.	N	0.9	0.43	1.1	1.7	36.60
S-134	do	2.5	Across gossan zone containing lead and zinc.	0.01	0.9	0.29	1.2	5.3	60.20
S-135	do	3.0	Across red to buff kaolinized shear overlain by fine-grained granite.	N	0.6	0.14	N	0.82	12.60
S-136	do	3.0	Fe stained gossan rich in biotite and pyrite.	N	0.1	0.10	N	1.3	10.40
S-137	Random Grab	0	Grab of dump material, Fe stained gneiss.	0.01	1.3	0.14	1.7	0.43	55.10

FIGURE 6

ILLUMINE MINE
SE/4 SW/4 SEC 17 T 19 S R 71 W
JOINED GRAPE CREEK WSA
CANON CITY, CO
10/22/85
COKE C - DREW



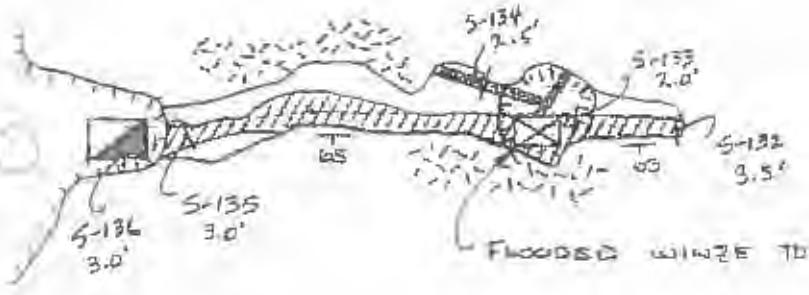
SURFACE MAP



COLLINS-ENE MINE
SE/4 SW/4 SEC 17, T19S, R71W
LOWER GRAPE CREEK WSA
CANON CITY, COLO.
10/22/80
COKER-OPEN

UNDERGROUND MAP

MINE WORKINGS - 3 LEVELS - MAIN DRIFT 104 FT LONG
2 WINZES CONNECT LOWER LEVELS - LOWER WORKINGS ARE FLOODED



BRECCIATED TO SHEARED ZONE UP TO 60 FT. WIDE W/ ALTERNATING BANDS OF FE STAINED BIOTITE RICH SCHIST AND MINOR BANDS OF FINE-GRAINED BIOTITE GRANITE. THIN GOSSAN ZONES RUN AT NEAR RT. ANGLES TO MAIN SHEAR, BUT THIS VARIES ALONG THE DRIFT. SOME MINOR SULPHIDES OCCUR ALONG SHEAR ZONE-COUNTRY ROCK CONTACT (PYRITE, CHALCOPYRITE AND BORNITE).

GOSSAN VEIN - FE STAINED, SILICEOUS

COUNTRY ROCK - BANDED GNEISS AND BIOTITE RICH, FINE TO MEDIUM GRAINED GRANITE.

Name:

Green Mountain Mine.

Base Map No.:

2.

Location:

SE¼NE¼ Sec. 26, T. 19 S., R. 72 W.

Elevation:

8,085 ft.

Access:

South from Parkdale on Copper Gulch Road 14 miles, then east 5 miles on Talbert Gulch to the mine.

Land Status:

Federally-controlled surface and minerals.

Geology of Deposit:

The various workings are in blocky broken gneiss and biotite schist, some garnetiferous with minor amounts of quartz and quartz stringers present. Abundant copper staining is present along fracture planes and small localized pockets of gossan in a quartz matrix. Disseminated pyrite in biotite shear gouge and gneissic-silicious material is also present in narrow veins.

Slickensided surfaces striking N40W are common in the gneissic material.

The dump contains oxidized iron stained fines and some copper oxides coatings consisting of malachite and azurite on a biotite gneiss.

Development:

Workings consist of eight shafts and five pits of varying size. Shaft 1 is a two-compartment shaft over 200 ft. deep, well timbered with ladders in the manway to level 1. Below level 1 the shaft is caved and inaccessible.

Shaft 2 is 5 ft. square by 23 ft. deep. Shaft 3 is a vertical shaft 4 ft. by 5 ft. at the collar and 22 ft. deep with an inclined drift 22 ft. long bearing N36E.

Shaft 4 is 3 ft. by 6 ft. and 24 ft. deep. Shaft 5 is 23 ft. deep and inaccessible. Shaft 6 is 13 ft. deep with a headframe. The project was probably intended for haulage and ventilation for the main mine but was never completed.

Shaft 7 is a 3 ft. by 6 ft. by 36 ft. deep shaft inclined at 60° to the NW. Shaft 8 is a vertical shaft 15 ft. deep caved 10 ft. from the surface.

The pits are of varying shapes and dimensions as follows: Pit 1 - 8 ft. x 8 ft. x 4 ft.; Pit 2 - 5 ft. x 6 ft. x 2½ ft.; Pit 3 - 6 ft. x 9 ft. x 3 ft.; Pit 4 - 15 ft. x 6 ft. x 2 ft.; Pit 5 - 30 ft. x 6 ft. x 6 ft.

Sampling:

A total of 20 samples were taken throughout the workings. Of the 20, 13 were continuous chip cut samples taken in the shafts and the pits across shear and alteration zones where possible. Where this wasn't possible the sample was taken across a non-weathered area.

Seven grab samples were taken across dumps and at the shaft collars.

Reserves and Property Potential:

The Green Mountain shear zone of copper rich biotite schist and shear gouge is traceable over a 980 ft. strike length and generally trends N40E. Locally rich zones of mineralization may approach 12% copper occurring as malachite.

The best potential appears to be in the proximity of shaft 3. Assays there averaged $198/ton. Other areas of high potential are in the main workings, which, though presently inaccessible, could provide an undetermined quantity of $70-80 rock.

Approximate tonnages in-place are on the order of 110,000 tons. Assuming a 3 ft. ore width and 980 ft. strike length.

History and Production:

The property was first mined in the early 1900s. Recorded production records show shipments of from 100 to 681 tons of ore per year from 1914 to 1918. Average ore grades were 12.71% Cu, 1.33 oz. Ag, and 0.11 oz Au. At today's market prices, the average ore would have produced $265 gross revenue per ton.

Mining and ore shipments took place sporadically in the late 30's with the last recorded shipment in 1954. Copper value of all ore shipments averaged 12.44%.

Table 7. Sample Results, Green Mountain Mine

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-1	Select Grab	0	Garnetiferous biotite schist and gneiss with interstitial malachite.	0.04	0.2	3.0	N	1.3	$ 68.00
S-2	do	0	Cu stained biotite schist.	N	0.2	1.6	N	0.18	27.60
S-3	Cont. Chip	3.0	Abundant Fe stained gossan.	0.01	0.8	2.0	N	0.57	44.50
S-4	do	3.0	Biotite schist with malachite and azurite as coatings.	N	N	1.1	N	0.44	17.60
S-5	Random Grab	0	Pump fines.	0.01	0.3	0.46	N	6.8	53.70
S-6	do	0	Garnetiferous biotite schist.	0.02	0.3	0.17	N	0.50	14.70
S-7	Cont. Chip	2.0	Gossan in a garnetiferous biotite rich schist.	0.03	0.1	0.98	N	0.20	30.50
S-8	do	2.0	Malachite rich, garnetiferous biotite schist.	0.01	0.5	2.9	N	0.50	55.90
S-9	Select Grab	0	do.	0.03	0.5	5.8	N	0.84	92.80
S-10	Cont. Chip	3.0	Alternating zones of Fe stained qtz. and weathered garnetiferous gneiss bearing traces of malachite.	0.03	0.4	1.0	N	1.6	33.50
S-11	Random Grab	0	Dump sample of oxidized fines with abundant garnet.	0.04	0.2	0.41	N	0.49	26.50
S-12	do	0	Lightly Cu coated biotite schist with minor gossan.	N	0.6	0.40	N	0.47	12.40

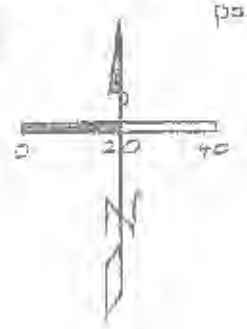
Table 7 Cont'd. Sample Results, Green Mountain Mine

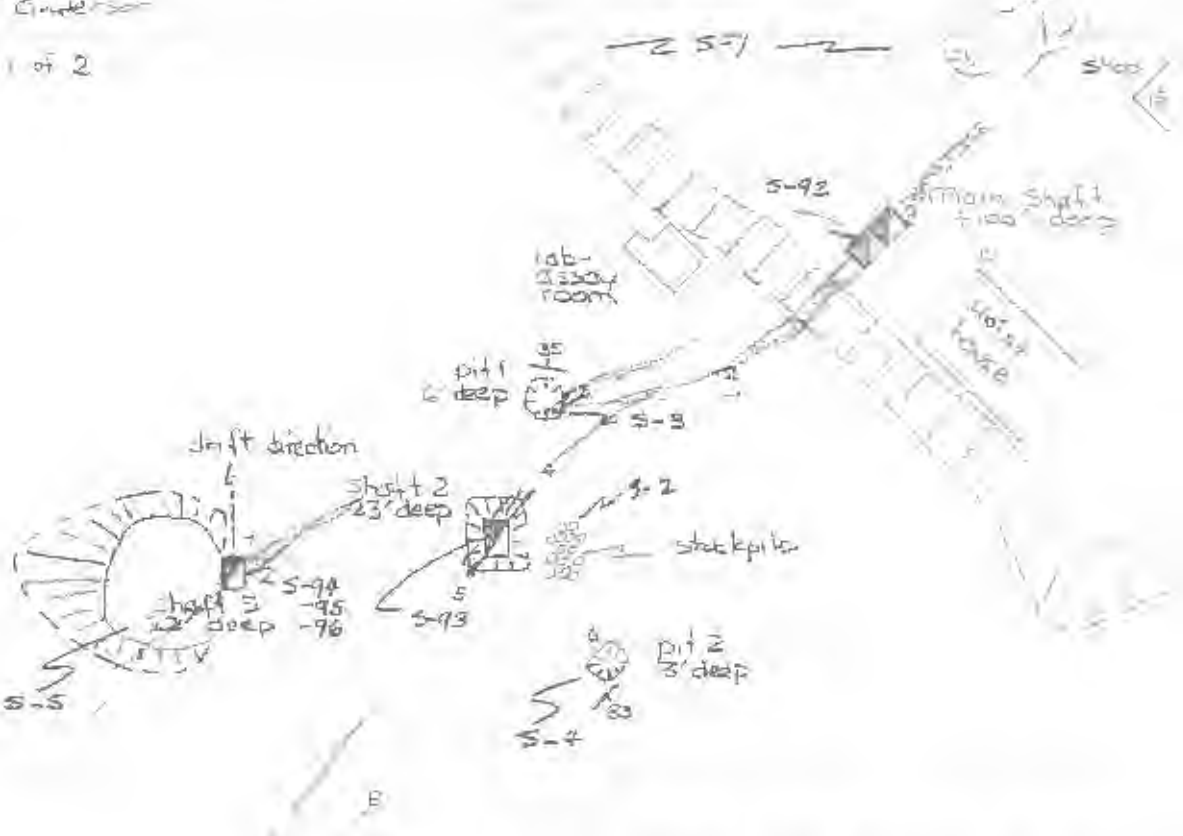
[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-92	Cont. Chip	7.0	Across shear zone with Cu precipitate and gossan.	0.05	0.6	1.3	N	0.23	$ 49.30
S-93	do	3.0	Altered, slickensided biotite schist with thin qtz. stringers.	N	0.3	0.21	N	0.54	6.40
S-94	do	2.0	Fe stained biotite schist with some gossan and alteration zones.	No assay obtained.					
S-95	do	3.0	Abundant Cu staining in a biotite schist.	0.03	0.4	12.0	N	0.06	209.50
S-96	do	3.0	Disseminated pyrite in a biotite shear zone with qtz. gneiss in narrow bands.	0.13	0.8	7.5	N	0.06	186.50
S-97	do	5.0	Altered biotite shear with minor Cu staining in qtz. matrix.	N	0.4	1.1	N	0.42	21.60
S-98	do	2.5	Friable biotite rich gouge with small veins.	0.05	0.5	0.76	N	0.72	39.66

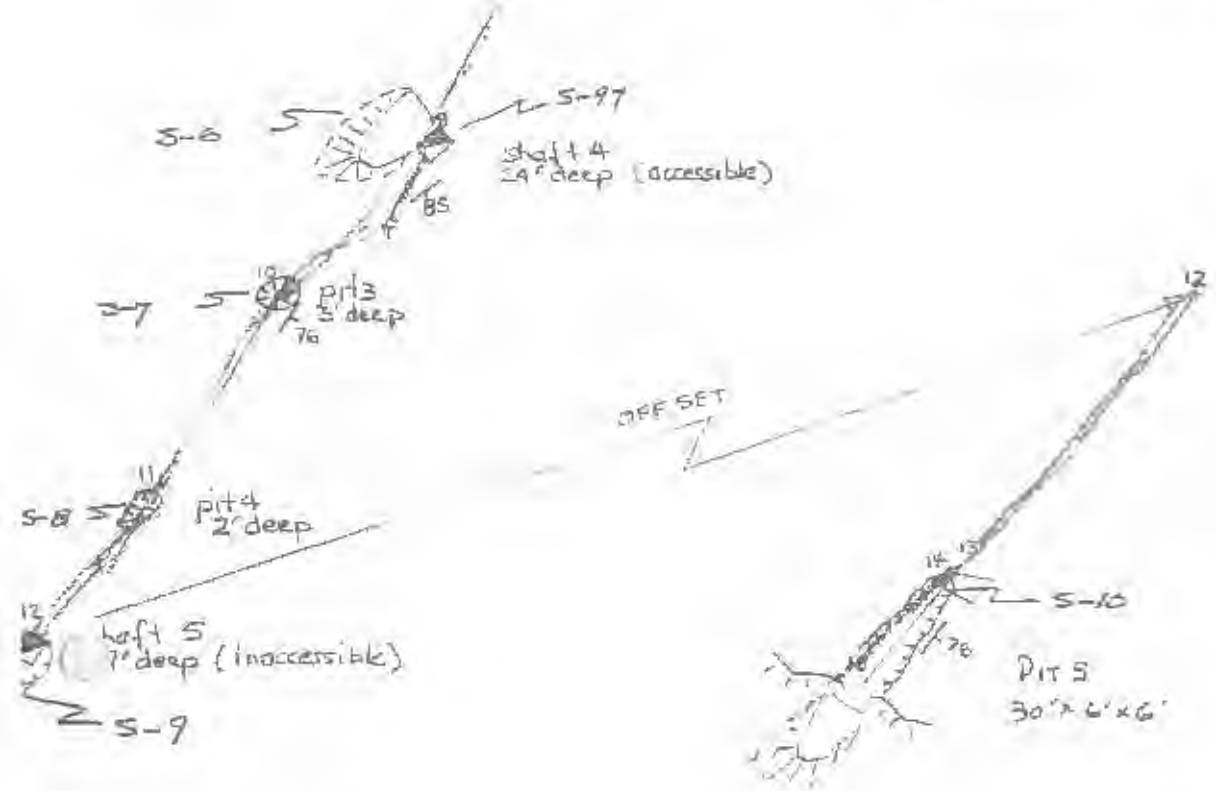
FIGURE 7

Cr Mt.
SE/4 NE/4 SEC 20, T16S, R7E
Fremont County, Colo
Cover as Hancock Claim
9/10/90

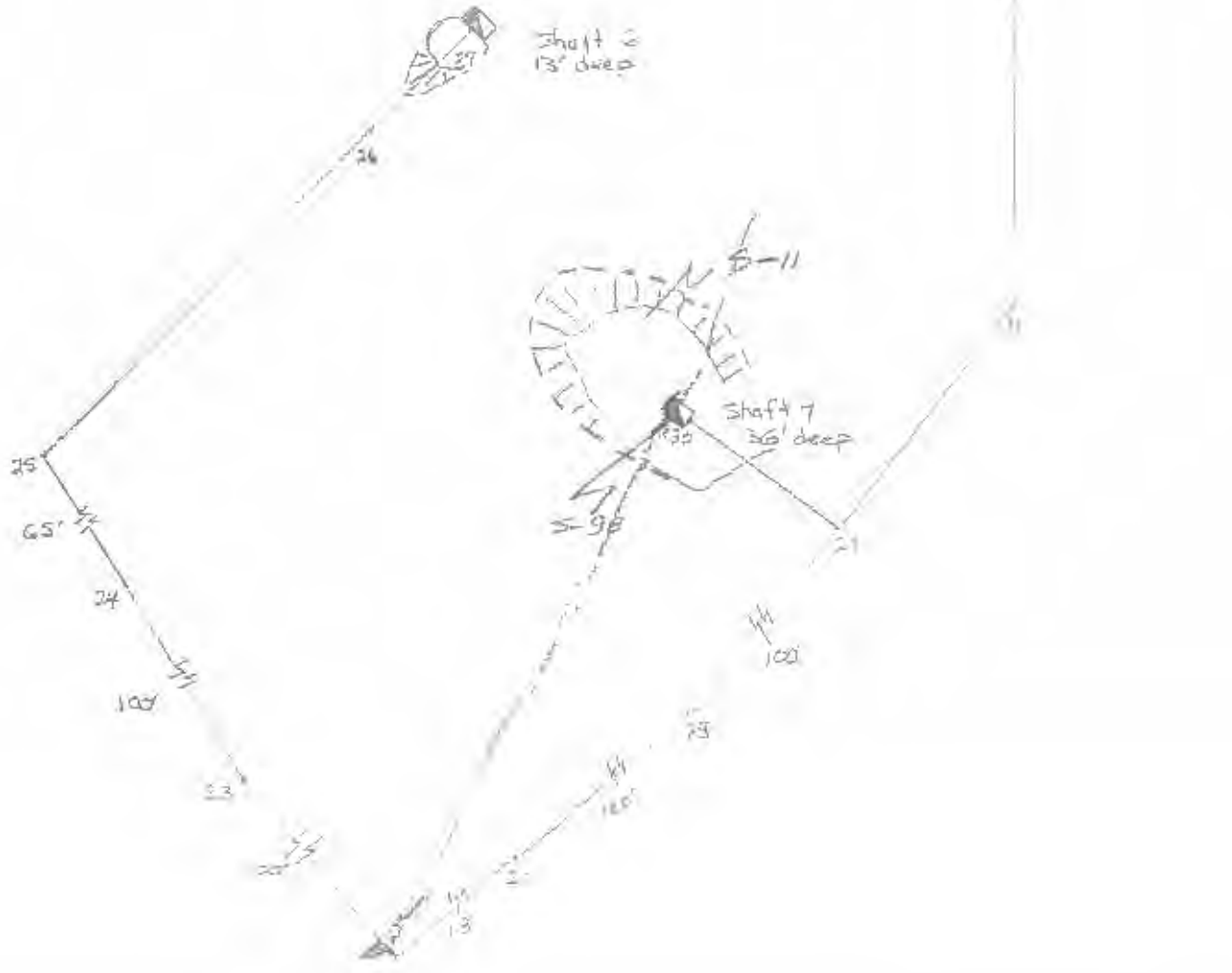




GARNETIFEROUS BIOTITE-RICH SCHISTS AND GNEISSES. SHEAR ZONES CONTAIN ABUNDANT Cu OXIDES AND CARBONATES, NOTABLY MALACHITE, AZURITE AND CHRYSOCOLLA. SULPHIDE ZONE IF PRESENT, IS NOT EXPOSED.



—ter Lucky Mine
E 1/4, NE 1/4, Sec 26, T 1 S, R 6 E
Fremont County, Co.
Owner: Jo Heinzl, Andersons
7/10/80 Page 2 of 2



Name:

Good News Complex (Goat Park).

Base Map No.:

6.

Location:

SW¼ Sec. 12, T. 19 S., R. 72 W.

Elevation:

7,380 feet.

Access:

South from Parkdale on Copper Gulch Road 4 miles to the Goat Park Drainage. Complex is 2 miles southwesterly from the mouth of the drainage.

Land Status:

BLM-controlled land.

Geology of Deposit:

Hydrothermally altered gneiss with pods of biotite schist with isolated quartz stringers and feldspar pegmatites is cut by a feldspar, biotitic pegmatite. A shear zone composed of a biotite rich, iron stained and locally garnetiferous gneiss with some copper staining is present along with small granitic intrusions showing some copper staining.

Development:

Complex consists of three trenches, two shafts and one adit. Shaft #1 is 27 ft. deep with various workings along its extent. Shaft #2 is inclined at 60° and 46 ft. deep. Trench #1 is 6 ft. wide by 14 ft. long bearing N55W. Trench #2 is 6 ft. wide by 13 ft. long bearing N69W. Trench #3 is 4 ft. wide by 12 ft. long bearing N47W. The adit bears N29W for 13 ft., then turns N79W for 9 ft.

Sampling:

Four continuous chip samples were taken at the various workings concentrating on the shear and alteration zones and three selective grab samples were taken across the major dumps.

Reserves and Potential:

There are no mineable reserves blocked out at this time. Potential appears limited unless the system is a surface expression of a buried ore body.

History and Production:

Good News Complex was located April 3, 1971 by Harry E. Coppin of Wheat Ridge, Colorado, in the Green Horn Mining District and officially named Good News #1. No production posted.

Conclusions:

The adit and shaft #2 contain copper of sufficient quantity to warrant further investigation but the other workings do not. This area is a good example of local secondary enrichment. The mineralization, in the form of copper oxides, occurs as a result to percolation of mineral-rich solutions through a fractured, altered, biotite gneiss. Mineralization is spotty and only locally rich.

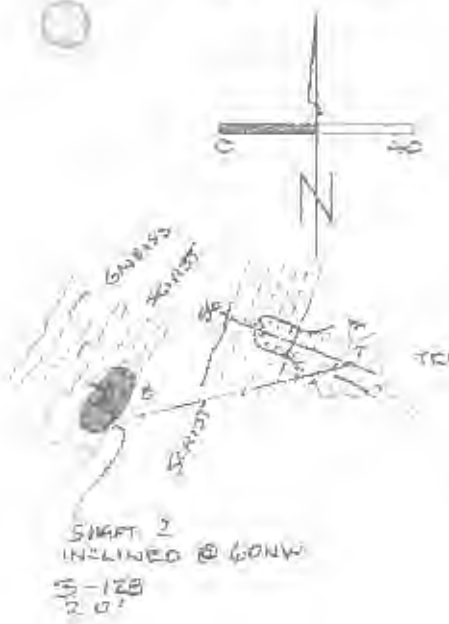
Table 8. Sample Results, Good News Complex (Goat Park)

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-124	Cont. Chip	3.0	Shear zone dipping @47° NW Biotite rich, iron stained.	0	.2	.38	0	.02	$ 8.00
S-125	do	4.0	Biotite schist shear zone.	0	.2	.2	0	.02	5.00
S-126	Select Grab	0	Dump material is a hydrothermally altered gneiss grading to biotitic schist.	0	.2	.05	0	.02	3.00
S-127	do	0	Stockpile material of feldspar pegmatite and biotite gneiss.	.03	.1	3.3	0	.01	70.00
S-128	Cont. Chip	2.0	Biotite schist w/small granitic intrusions with some copper staining.	0	.5	3.4	0	.02	59.00
S-129	do	2.5	Gossan zone, iron stained with quartz stringers flanked by fine-grained granite.	.03	2.3	1.4	0	.02	62.00
S-130	Select Grab	0	Dump material.	.01	.8	2.7	0	.02	57.00

GOOD HOPE No. 1 IRON TIGER
NW¼ SEC 12, T 17S R 75W
10/21/80
FREMONT COUNTY, COLO.
COKER-DREW

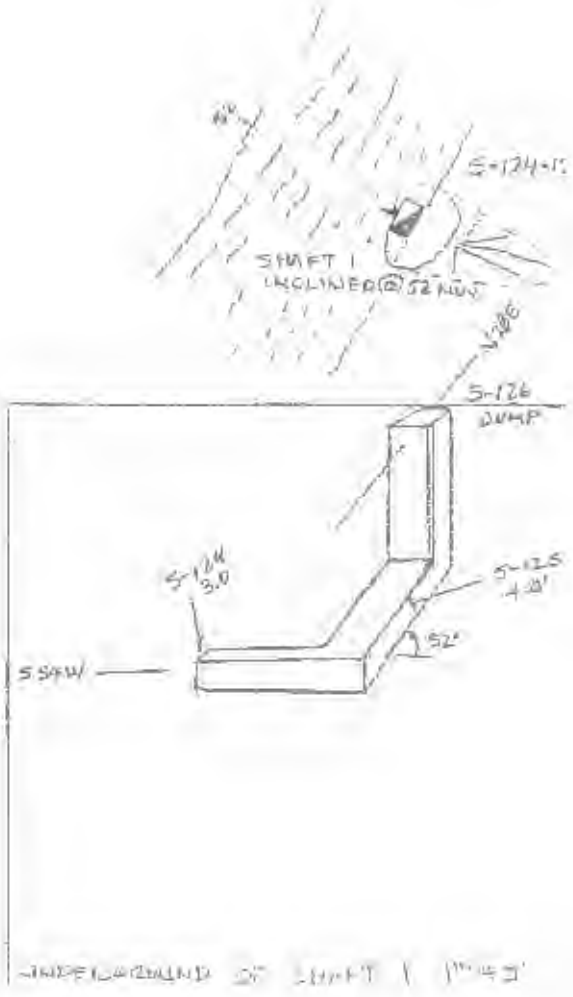
FIGURE 5



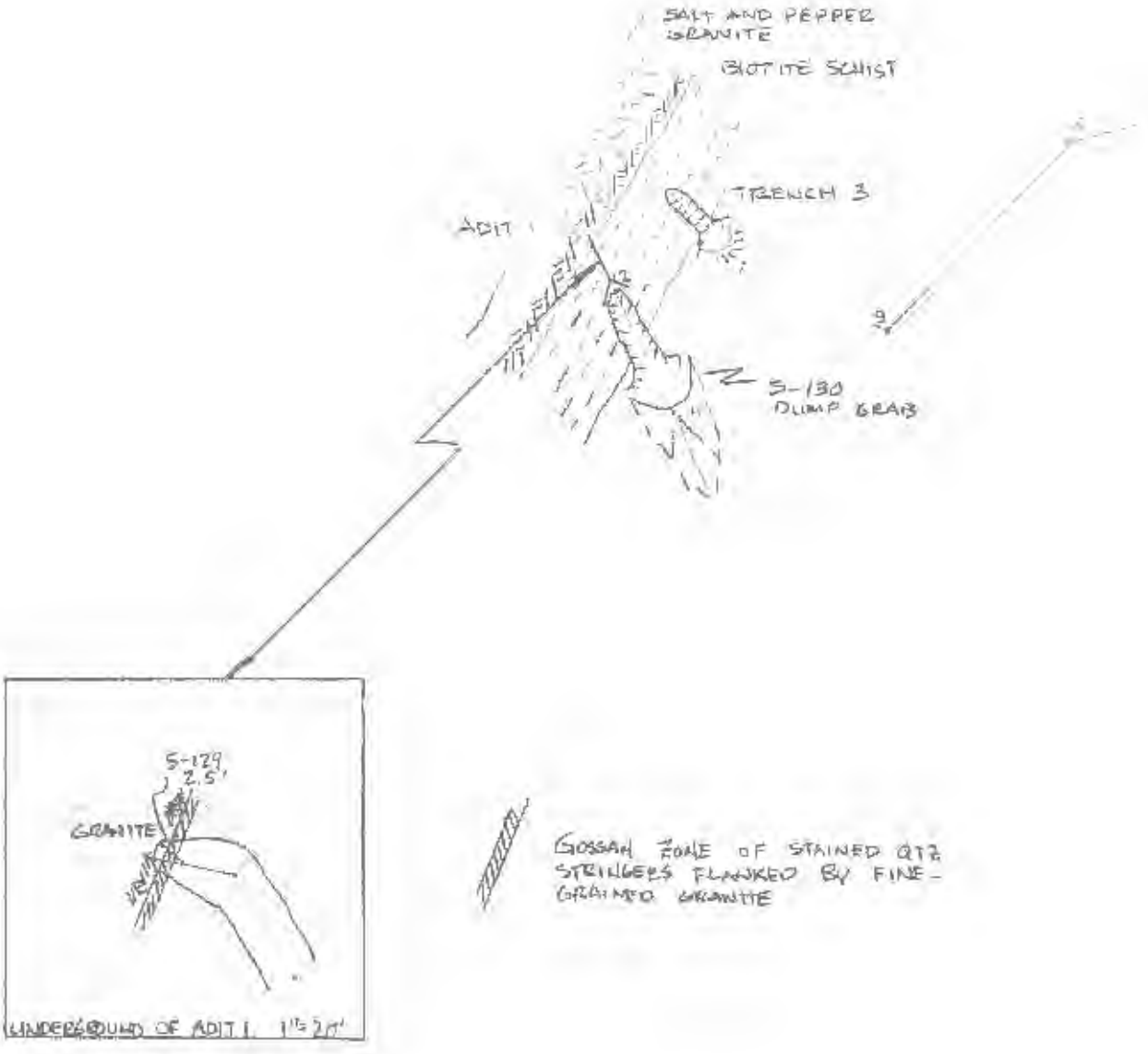
BANDED BIOTITE-RICH GNEISS LOCALLY HYDROTHERMALLY ALTERED AND GARNETIFEROUS - SOME MINOR Fe AND Cu STAINING IN FRACTURES AND JOINTS -

ALTERED SLICKENSIDED, BIOTITE-RICH SCHIST. TRACES OF MnO_2 COMMON AT DEPTH.

NOTE. COUNTRY ROCK IS GENERALLY SCHISTOSE WITH ALTERNATING BANDS OF COMPETANT BIOTITE-RICH GNEISS. REGIONAL FOLIATION IS N30E WITH A DIP OF 50-70 NW. FOLIATION IS CONSIDERED STRONG. GOSSAN ZONES HAVE DEVELOPED ALONG FAULT CONTACTS WITH SUBSEQUENT ACCUMULATION OF MINOR OXIDES OF Fe AND Cu.



SCALE 1"=40'


SALT AND PEPPER GRANITE
BIOTITE SCHIST
TRENCH 3
ADIT 1
S-130 DUMP GRAB
GOSSAN ZONE OF STAINED QTZ STRINGERS FLANKED BY FINE-GRAINED GRANITE
S-129 2.5'
GRANITE
UNDERGROUND OF ADIT 1 1"=20'

Name:

Copper Girl and Valley View

Base Map No.:

1.

Location:

NW¼, Sec. 14, T. 19 S., R. 72 W.

Elevation:

7,680 ft.

Access:

South from Parkdale on Copper Gulch Road 7 miles, then left down the Goat Park drainage to the first fork. The complex is a ½ mile walk-up the north fork.

Land Status:

The complex is on patented land.

Geology of Deposit:

Workings are driven in a thin zone of alternating biotite schist and gneiss, locally hydrothermally altered to kaolinite. The dip of the structure varies between 35° and 45° to the NE.

Fractured, jointed biotite schist to gneiss contains some localized quartz. Slickensides are common. The material appears to be hydrothermally altered with copper and iron staining common along fracture surfaces. Copper predominates in schistose areas with chalcopyrite and bornite present in more competent zones.

Development:

The complex consists of three adits, one pit and a caved shaft. Pit 1 is circular, 19 ft. in diameter, 10 ft. deep and lies at the portal of adit 3. Adit 1 is inclined downslope 148 ft. The adit contains 3 stopes on the left and two on the right. The left-hand stopes bear approximately N45E. The first stope on the right bears N28E for 19 ft. The second bears N38E for 61 ft. At a distance of 82 ft. from the portal is an overhand stope running to the surface and intersecting inclined adit 2.

Sampling:

Fourteen samples were taken at the complex. Thirteen of these samples were continuous chip samples taken in each spur, drift, winze and in the

adit proper. All samples were taken in alteration zones or at the termination of the individual working. The single grab sample was taken across the dump area at the pit and adit 3.

Reserves and Property Potential:

The average in-place ore value for this patented mine is $70.58 at current metal prices. Net smelter returns would average approximately $42.00 per ton in-place. The property has no real value unless the ore could be heap leached at the site. Current blocked-out resources are approximately 3,600 tons.

History and Production:

The Copper Girl and Valley View claims were both patented on October 30, 1906, by R. S. Fairchild. The patent number is 44686. The claims are in the Greenhorn Mining District.

The Copper Girl produced 9 tons in 1915, 50 tons in 1916, and 22 tons of ore in 1917. The average ore grade mined was 0.83 oz Ag, and 9.14% Cu per ton. At today's metal prices, the historical production is valued at $163.60 per ton.

Conclusions:

Sample 122 is from a highgrade area that rivals the values achieved in 19151917. There are still small tonnages of very highgrade material available, but not sufficient to justify large capital expenditures. The mine may be indicative of a larger buried ore body.

Table 9. Sample Results, Copper Girl and Valley View

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-110	Cont. Chip	3.0	Across fractured, malachite coated dendritic gneiss.	N	0.4	7.9	N	N	$130.40
S-111	do	6.0	Across highly fractured, copper coated gneiss.	N	0.3	4.9	N	0.01	81.40
S-112	do	2.5	Fractured, hydrothermally altered gneiss and fine-grained granite.	N	0.3	1.8	N	0.01	31.80
S-113	do	6.0	Malachite coated, fractured gneiss grading laterally into a biotite schist.	N	0.2	2.6	N	N	43.60
S-114	do	6.0	do.	N	0.5	7.5	N	N	125.00
S-115	do	5.0	Soft, altered biotite schist, coated with azurite and malachite, some garnet remnants.	N	0.7	4.7	N	N	82.20
S-116	do	4.0	Across fractured, hydrothermally altered schist to gneiss. Cu predominately in schist.	N	0.2	1.6	N	0.01	27.60

Table 9 Cont'd. Sample Results, Copper Girl and Valley View

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-117	Cont. Chip	3.0	Across barren biotite gneiss grading to biotite schist.	N	0.3	0.17	N	0.1	$ 5.72
S-118	do	4.0	Lightly Cu stained schist with traces of Mn dendites.	N	0.2	0.81	N	0.01	14.96
S-119	do	6.0	Biotite rich gneiss, in places schistose, Cu coated.	N	0.3	2.6	N	0.02	44.60
S-120	do	5.5	Alternating qtz and qtz gneiss with Cu stained biotite schist near hanging and foot walls.	N	0.3	5.0	N	N	83.00
S-121	do	4.0	Cu stained, altered schist grading to a qtz. gneiss.	N	0.3	5.1	N	N	85.00
S-122	do	5.0	Kaolinized schist having distinctive slump structure, heavy malachite coating in joints and fractures.	N	0.7	9.7	N	N	162.20
S-123	Select Grab	0	Dump material of granite, biotite gneiss and Cu stained schist.	N	0.4	2.8	N	0.02	46.80

Name:

Little Giant Claims.

Base Map No.:

4.

Location:

E½ Sec. 20, T. 19 S., R. 72 W.

Elevation:

7,650 ft.

Access:

South from Parkdale on Copper Gulch Road 14 miles, then east on jeep trail 1 mile.

Land Status:

Privately-owned land.

Geology of Deposit:

Country rock is a Precambrian biotite gneiss with local quartz veins showing some minor iron staining. Within the country rock are zones of red feldspar, fine- to medium-grained with large remnant feldspar crystals and shear zones altered and unaltered biotite with some red rhyolite and quartz feldspar pegmatite.

Development:

Workings include three timbered shafts and three prospect pits. Shaft #1 is 61 ft. deep, shaft #2 is 22 feet deep and shaft #3 is 16 ft. deep. Pit #1 is 8 ft. by 8 ft., #2 is 10 ft. by 8 ft., and #3 is 4 ft. by 4 ft.

Sampling:

One continuous chip sample was taken across the NE end of shaft #3 in a kaolinized alteration zone. Two grab samples were taken from the area; one from a dump and one from a stockpile.

Reserves and Potential:

The single continuous chip sample (no. 110) assayed 7.9 percent copper over a 6 ft. width. This anomalie rates as one of the highest concentrations of copper in the area. The area should be resampled and mapped in detail to determine reserves and potential.

History and Production:

None.

Conclusions:

The assay value of the chip sample indicates a high concentration of copper, but the stockpile sample shows no significant mineralization. The area should be re-examined and resampled to determine if the original assays were in error.

Table 10. Sample Results, Little Giant Claims

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-103	Random Grab	0	Dump material of banded gneiss, biotite schist and some white quartz.	0	.2	.02	0	.01	$ 2.00
S-104	do	0	Stockpile material, quartz rich banded gneiss with some light green staining.	0	.3	.01	0	.02	3.00
S-110	Cont. Chip	6.0	Kaolinized alteration zone.	0	.4	7.9	0	0	130.00

Name:

Yorkville Area Prospects.

Base Map No.:

8.

Location:

These workings occur as scattered prospect pits in section 27, T. 20 S., R. 71 W.

Elevation:

7,740 ft.

Access:

South to southwest of Canon City for 19 miles on Oak Creek Grade, a well-maintained gravel road to the Yorkville Site, then south for 1 mile to the group of workings.

Land Status:

The prospect pits are on private land some of which contain a split mineral estate.

Geology of Deposit:

The country rock is a garnetiferous, green to black biotite-rich gneiss, which grades into a biotite-rich, chlorite-rich schist. Secondary copper occurs as coatings in joints and fractures in the harder country rock. Local occurrences of vein type barite deposits and stringers less than 1 ft. thick are common in NE trending shears. No major structure occurs and foliation is generally striking NE.

Development:

There were numerous prospect pits sunk in a biotite-rich schist. Two groups that showed visible copper mineralization were sampled. Pit 1 is 15 ft. in diameter and averages 4 ft. deep. Sample 58 was obtained from the dump surrounding this pit. The pit bears N60E, the dip of the structure is S4°NW. Three other small pits were closely examined. These pits contained a thin barite vein (4 ft.) striking N75E and dipping 42°NW. Sample 59 was a selected grab of dump material from around the 3 prospect pits.

Sampling:

There were two dump samples taken as described under number 5. The material was generally gneissic containing some secondary copper as coatings and some barite.

Sample 58 - Dump grab from Pit 1.

Sample 59 - Dump grab from small prospect pits.

Mine Reserves:

The assay from sample 58 showed high silver and copper values. The amount of material available from the dump was less than 1 ton so no reserves exist. The lense of material was mined out of the pit leaving barren wall rock on a truncated structure. No reserves are indicated in either group of prospects.

Production of History:

There is no recorded production from this area.

Conclusions:

These properties have no potential as base or precious metal deposits.

Table 11. Sample Results, Yorkville Prospects

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-58	Select Grab	0	Dump sample of malachite coated gneiss and barite.	N	2.2	2.5	N	0.01	$ 62.00
S-59	do	0	Dump sample of vein barite and gossan.	N	0.2	0.06	N	0.03	3.00

Name:

Cotopaxi Mine.

Base Map No.:

10.

Location:

NE¼NE¼ Sec. 36 and NW¼ Sec. 25, T. 48 N., R. 11 E.

Elevation:

7,280 ft.

Access:

Inquire in Cotopaxi to find the mine caretaker to have the gate across the mine access road unlocked.

Land Status:

Private surface and minerals.

Geology of Deposit:

Gneisses and schists with abundant biotite, garnet, chalcopyrite and some quartz. Copper and iron staining is abundant as well as interstitial copper. Chrysocolla, azurite and malachite are abundant in the biotite schist and as coatings and fracture fillings in fine-grained granites and quartz. All copper appears to be secondary.

Development:

The workings consist of two adits. Adit 1 is 400 ft. long bearing N85W with a 600 ft. long drift bearing N75W, starting on the left rib 200 ft. from the portal. On the right rib is another drift 30 ft. long bearing S75E.

Adit 2 strikes N20W.

Sampling:

Two continuous chip samples and one random chip were taken on the property. The random chip was taken in adit 1 and one continuous chip was taken in adit 2. The second continuous chip was taken across a bench in a surface working.

Reserves and Property Potential:

The Cotopaxi Mine is currently being renovated. The mine owners feel that substantial amounts of high-grade zinc ore are still present. The ore zones tend to be lensoidal and discontinuous along strike. Small pockets of high-grade ore are interspersed in a granodiorite-biotite gneiss country rock. Chances are good that additional ore remains, but due to the nature of the deposit, delineation of ore horizons would be difficult using remote techniques. Longhole drilling from existing stopes and drifts may be warranted.

History and Production:

Recorded production began at the Cotopaxi Mine in 1915. The last mining took place in 1950 when 33 tons of ore was removed. Maximum production was reached in 1945 when 3,862 tons of Cu-Pb-Zn ore was removed to aid the war effort.

The total recorded production for the Cotopaxi Mine is 17,551 tons of Cu-Pb-Zn ore averaging 0.01 oz. Au, 0.97 oz. Ag, 1.11% Cu, 0.58% Pb, and 10.41% Zn. Average value per ton at today's metal prices would be $109.47.

Conclusions:

Assays indicate this property may have mineral potential but more exploration is necessary to confirm the existence of higher-grade reserves at depth.

Table 12. Sample Results, Cotopaxi Mine

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-182A	Cont. Chip	5.0	Qtz.-biotite gneiss with abundant sulphides of copper and zinc.	N	0.2	1.9	N	3.2	$58.00
S-182-B	do	5.0	Minor amounts of Cu oxides and carbonates in a soft schist to hard, banded gneiss.	N	1.0	0.49	N	1.8	32.24
S-181	Random Chip		do.	N	.20	.04	N	.03	2.64

Name:

Goat Park, Good News No. 2

Base Map No.:

11.

Location:

NW¼SW¼, Sec. 12, T. 19 S., R. 72 W.

Elevation:

7,600 ft.

Access:

South from Parkdale 4 miles to the Royal Gorge Ranch. Then follow a jeep trail 1.5 miles SE to Goat Park Gulch. The complex is 1.5 miles up the drainage.

Land Status:

The property is federally-controlled surface and minerals.

Geology of Deposit:

The country rock is Precambrian quartz monzonite, medium- to coarse-grained with large biotite phenocrysts which grades to thinly foliated, fine-grained biotite gneiss. The shear zone grades from kaolinized schist to competent copper-stained schist. Copper staining is confined to the biotite schist and occurs only locally as secondary mineralization.

Development:

Complex #1 consists of: a two compartment shaft 4 ft. x 8 ft. x 34 ft. deep, timbered and flooded; a trench 32 ft. long ending in a 5 ft. adit, both of which trend N52E; two pits, #1 10 ft. in diameter x 4 ft. deep and #2 is 4 ft. x 8 ft. x 3 ft.; and a dump 150 ft. x 25 ft. x 20 ft.

Complex #2 consists of: a major adit 148 ft. long, bearing N70W. At 79 ft. is an underhand stope along the right rib, 8 ft. wide x 19 ft. long bearing N28E and dipping 40°NE, and at 82 ft. there is an overhand stope along the 6 ft. rib, 34 ft. long bearing N33E; one small pit 12 ft. x 6 ft. bearing N60W; and two small inclined adits connected to the major adit.

Sampling:

Three continuous chip samples were taken across gouge zones at Complex #1 and one grab sample was taken over the area of the dump.

Reserves and Property Potential:

None.

History and Production:

The Good News No. 2 was located by Harry Coppin in 1971. The area was previously worked but no record exists prior to location by Coppin.

Conclusions:

Sample #99 is probably inaccurate since it is so far off the other values. This location should be resampled and if it remains high, the entire property should be reevaluated, otherwise the Complex has no precious of base metal potential.

Table 13. Sample Results, Goat Park, Good News No. 2

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-99	Cont. Chip	1.0	Across a thin, biotite rich gouge of identifiable schist, heavily malachite coated.	N	1.4	15.5	N	N	$262.00
S-100	Random Grab	0	Across undifferentiated dump. Material is generally a biotite schist with minor amounts of qtz., garnet.	N	0.2	1.1	N	0.02	19.60
S-101	Cont. Chip	1.5	Soft biotite rich gouge bearing a 6" milky qtz. vein.	N	0.2	0.63	N	0.01	14.90
S-102	do	1.5	Soft biotite rich gouge containing a 6" qtz. vein.	N	0.1	0.04	N	0.01	0.00

Name:

Dawson Mountain-Surprise Group (Copper Boy-1902).

Base Map No.:

12.

Location:

SE¼, Sec. 14, T. 19 S., R. 71 W.

Elevation:

7,000 ft.

Access:

Approximately 5 miles SW of Canon City on Temple Canyon Road, then 1 mile SW on a 4-wheel drive road to the old Copper Boy Prospects.

Land Status:

These workings are scattered over several patented mining claims and newly staked but unpatented mining claims known as Sam 1-15. The Sam Group was located 2/12/77 by Pacific Coast Mines, Inc.

Geology of Deposit:

The area is composed of quartz-biotite gneisses and granodiorite with foliation trending N70-80E. The main shear zone on which the workings are driven or sunk grades from a biotite gneiss to a hydrothermally-altered biotite schist. The shear zone is occasionally gossany in texture and appearance.

The main fault strikes N75E and is generally steeply dipping (60°-85°SE). Secondary copper coating is common along the footwall contact. The main shear zone is continuous over a strike length of 520 ft.

Development:

The workings consist of three pits and two inaccessible adits. Pit 1 is a prospect 8 ft. x 10 ft. x 7 ft. deep. A shear zone cuts through the pit striking N80E and dipping 62°SE.

Pit 2 is a glory hole 29 ft. in diameter and 12 ft. deep. A massive dump containing approximately 1,750 tons of waste rock surrounds pit 2.

Pit 3 is a small prospect in a shear zone striking N65E and dipping 65°SE. The structure from pit 1 to pit 3 is continuous. Gossan and kaolinized schist fill the shear zone.

Adit 1 is a caved adit drifting N78W into an iron stained gossan zone of altered biotite schist. A local quartz vein up to 3 ft. in width contains abundant phenocrysts of biotite and magnetite.

Adit 2 is a N75E trending adit, inaccessible except near the portal. The adit was driven on a gossany shear zone containing small pockets of iron-stained quartz.

Adit 3 trends N40E and was driven on a highly oxidized sheared gouge having minor amounts of secondary copper mineralization. Twenty feet in from the portal there is a winze 100 ft. deep inclined to the SE. The adit extends an additional 25 ft. past the winze.

Sampling:

Six samples were taken at the various workings. Five continuous chip samples were taken across zones of alteration and shear zones where possible. In the inaccessible adits samples were cut across copper or iron-stained zones at the portal. The only grab sample was taken across the dump of pit 2.

Reserves and Property Potential:

This weakly mineralized shear zone contains minor prospect pits and inaccessible workings. The sample assays indicate no ore grade material near superficial outcrops. There is a possibility of in-place reserves at depth, but an extensive rehabilitation program and drilling program would have to be carried out to determine what, if any, mineralized material exists at depth.

History and Production:

The Copper Boy prospect showed production in 1902. Five hundred tons of 0.05 oz. Au, 0.77 oz. Ag, and 2.90% Copper ore was produced. Value at today's market price of that ore was $81.60.

Conclusions:

As mentioned above, these properties appear to have little potential based on sample assays. Based on historical production the property could be mined at a profit, but it would require large tonnages equivalent in mineral content to the reported 1902 figures.

Table 14. Sample Results, Dawson Mountain-Surprise Group (Copper Boy)

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-28	Cont. Chip	5.0	Altered, biotite rich shear zone.	.03	.5	.37	0	.08	$27.42
S-29	do	4.0	Rich, iron stained gossan zone of biotite schist and a quartz vein.	.02	.6	.49	0	.04	24.84
S-30	Random Grab	0	Dump sample of copper oxide stained quartz biotite gneiss and schist.	0	.5	.37	0	.03	10.92
S-31	Cont. Chip	4	Hydrothermally altered shear zone of gossan and biotite gneiss.	0	.4	.76	0	.06	16.16
S-32	do	3.5	Gneiss alternating with biotite schist and shear gouge.	0	.4	.40	0	.06	10.40
S-33	do	3.5	Pockets of iron stained quartz in a weak shear with copper oxide staining occurring along the hanging wall.	0	.4	.52	0	.14	12.32

Name:

Texas Creek Prospect.

Base Map No.:

13.

Location:

S½SW¼ Sec. 36, T. 18 S., R. 73 W.

Elevation:

7,360 ft.

Access:

North from Texas Creek 3 miles on Texas Creek Gulch. The property is east of the road.

Land Status:

The location is on federally-controlled surface and minerals.

Geology of Deposit:

Black, poorly banded gneiss with the dump material containing chalcopyrite and bornite in quartz as small isolated blebs.

Development:

One well timbered shaft 8 ft. by 10 ft. by 20 ft.

Sampling:

One random grab sample taken across the shaft dump.

Reserves and Property Potential:

None.

History and Production:

None.

Conclusions:

Based on the sample taken, this property is not valuable for base or precious metals.

Table 15. Sample Results, Texas Creek Prospect

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-177	Random Grab	0	Dump grab from black, poorly banded gneiss with traces of chalcopyrite and bornite in Qtz.	N	0.8	0.04	N	N	$ 8.50

Name:

Titusville and Westfall Gulch Prospects, Arbor and Grape Claims.

Base Map No.:

I4.

Location:

These prospects occur in sections 25, 26, 27 and 34, T. 20 S., R. 72 W.

Elevation:

7,600 ft.

Access:

Northwest from Canon City on Highway 50 approximately 8.5 miles to Parkdale; then south on Copper Gulch Rd. 17 miles to the Fremont-Custer County line; then east 5 miles on a gravel and dirt road to Titusville Gulch and vicinity.

Land Status:

The surface is generally private with the mineral estate reserved to the Federal Government.

Geology of Deposit:

The country rock is a weathered fine-grained granite, locally pegmatitic Zones of gneiss occur which are rich in biotite and grade into a biotitic schist. The regional strike is N60E and generally steeply dipping (50°-80°SW). The structure is uncomplicated in that no major faults occur. Minor shears are aligned with the regional strike.

Description of Workings:

There are four prospect groups having pits, trenches and an occasional timbered shaft in the area. The pits vary from 10 ft. to 20 ft. in diameter. Two trenches, the largest which is 24 ft. long, occurs in section 28. The shafts are 42 ft. and 19 ft. deep and poorly timbered.

Sample Analysis and Description:

Sample 63--A select dump sample of barite, calcite and gossany granite.

Sample 64--4 ft. continuous chip across shear zone in prospect pit 1. The biotite-rich shear is highly weathered and steeply dipping.

Sample 65--3 ft. continuous chip sample across a shear zone of highly weathered granite in prospect 2.

Sample 66--Dump grab from around shaft 1 and pit 1. Vuggy quartz with associated fine-grained granite and biotite gneiss.

Sample 67--3 ft. continuous chip across pit 1 in prospect group 3. Traces of malachite occur as coatings in fractures and joints.

Sample 68--Dump grab of dark, highly oxidized siderite having disseminated pyrite cubes and vugs filled with quartz crystals. Sample is taken from shaft 1 in prospect group 4.

Sample 69--2.5 ft. continuous chip sample across structure found at the collar of shaft 1, prospect group 4. The shear zone strikes N20E and dips 28°NW and consists of iron-stained gossan.

Sample 70--1.5 ft. continuous chip sample across kaolinized shear zone at the collar of shaft 2, prospect group 4.

Mine Reserves:

The prospects delineate no ore grade reserves.

History and Production:

This area was claimed in 1977 by Congdon and Carey Associates. Section 25 contains 19 claims known as Grape Nos. 1-19. Section 26 contains the Arbor claims Nos. 5-9. Section 35 contains the Arbor Nos. 1-7, all or part.

There is no recorded production for any mines or prospects in this area.

Conclusions:

These properties show little or no potential. There are no continuous structures exceeding 100 ft. on strike. The vein type occurrences are thin and generally pinch out quickly.

Table 16. Sample Results, Titusville and Westfall Gulch Prospects

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-63	Select Grab	0	Barite-Calcite injected granite.	N	0.2	N	N	N	$ 0.00
S-64	Cont. Chip	4.0	Weathered biotite schist.	N	0.2	N	N	N	0.00
S-65	do	3.0	Weathered fine-grained granite.	N	N	0.06	N	0.01	0.00
S-66	Select Grab	-0-	Dump material of vuggy Fe stained qtz and fine-grained granite.	0.05	0.2	1.1	N	0.01	47.10
S-67	Cont. Chip	3.0	Across shear of biotite schist.	N	0.8	0.01	N	N	8.00
S-68	Select Grab	-0-	Dump material of Fe stained vuggy qtz and siderite.	N	0.2	0.05	N	0.05	2.80
S-69	Cont. Chip	2.5	Shear of Fe stained gossan.	N	0.4	0.03	N	0.05	4.50
S-70	do	1.5	Kaolinized fault gouge.	N	0.5	N	N	0.01	5.00

Name:

Gem Mountain Pits A and B.

Base Map No.:

15.

Location:

NW¼SW¼ Sec. 28, T. 20 S., R. 73 W.

Elevation:

8,160 ft.

Access:

South from Texas Creek on State Highway 69 15.5 miles to Reed Gulch. Follow the main road north 2 miles. The pits are 1 mile from the road in a N45W direction.

Land Status:

Privately-owned surface and minerals.

Geology of Deposit:

Silica rich, feldspar rich pegmatite with possible niobium mineralization.

Development:

Two small pits are on the property. Pit A is 20 ft. in diameter and 6 ft. deep. Pit B is 4 ft. deep located above an inaccessible, timbered shaft.

Sampling:

One random grab sample taken across the dump area of the pits.

Reserves and Property Potential:

None.

History and Production:

None.

Conclusions:

This property is not valuable as a source of base or precious metals.

Table 17. Sample Results, Gem Mountain, Pits A & B

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-176	Random Grab	0	Silica rich, feldspar rich plug of granodiorite.	0.01	0.3	0.01	N	N	$ 7.50

Name:

Indian Springs Gulch.

Base Map No.:

16.

Location:

SE¼ Sec. 18, T. 49 N., R. 12 E. (New Mexico Principal Meridian).

Elevation:

8,760 ft.

Access:

North from Cotopaxi 8 miles on Bernard Creek. At this point take the jeep road east .75 miles, then north on another jeep road 1 mile to the property.

Land Status:

Privately-owned surface and minerals.

Geology of Deposit:

Medium-grained granite with interstitial hematite and fine-grained biotite gneiss.

Development:

One two-compartment shaft 4 ft. by 8 ft. by 50 ft. oriented N60E, with a poorly timbered headframe and one caved adit.

Sampling:

One select grab sample across the dump of the shaft.

Reserves and Property Potential:

None.

History and Production:

None.

Conclusions:

This property is not valuable for base or precious metals.

Table 18. Sample Results, Indian Springs Gulch

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-179	Select Grab	0	Dump material containing medium- to fine-grained granite with minor amounts of hematite.	N	0.7	0.06	N	N	$ 7.50

Name:

Sand Gulch Prospect (Cotopaxi Prospect).

Base Map No.:

17.

Location:

NW¼ Sec. 17, T. [illegible], R. [illegible].

Elevation:

7,640 ft.

Access:

North from Cotopaxi on Bernard Creek Road 1.5 miles to the Sand Gulch Cutoff. Follow Sand Creek 3 miles to a fork. Take the left fork ¼ mile to the prospect.

Land Status:

Federally-controlled surface and minerals.

Geology of Deposit:

Biotite schist, locally gneissic is predominant, showing signs of secondary copper staining, and extensive iron staining. In places the rock is a competent biotite gneiss containing small iron and manganese dendrites and quartz stringers.

Development:

One inclined shaft oriented N72W, for a distance of 73 ft. on slope. At the bottom of the shaft is a drift bearing S60E for 53 ft., then S18E for 27 ft. to a split. The right split is 42 ft. long and the left is 71 ft. long.

Sampling:

Five samples were taken in the shaft complex, all of which were continuous chip samples. Two of the samples were in the left split, one near face, the other at the midpoint. One sample was taken at the face in the right split and the other two near the split itself.

Reserves and Property Potential:

None.

History and Production:

None.

Conclusions:

Assay values indicate the property is not valuable as a source of base or precious metals.

Table 10 Sample Results, Sand Gulch (Cotopaxi Prospect)

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-168	Cont. Chip	3.0	Biotite schist enclosed in a hard biotite gneiss, some secondary Cu staining.	0.01	0.2	0.82	N	0.02	$21.00
S-169	do	5.0	Hard, well-banded qtz.-biotite gneiss.	N	0.3	0.02	N	N	3.10
S-170	do	3.5	Fe stained shear carrying thin qtz. stringers.	N	0.2	0.02	N	0.01	2.20
S-171	do	3.5	Competent biotite schist, dendritic.	N	0.5	N	N	N	5.00
S-172	do	3.0	Friable granitic intrusion into biotitic gneiss.	N	0.4	N	N	N	4.00

Name:

Joker and Rocky Mountain Boy Claims.

Base Map No.:

18.

Location:

SW¼ Sec. 15, T. 19 S., R. 71 W.

Elevation:

7,600 ft.

Access:

Southwest from Canon City 4 miles on Temple Canyon Road, then left onto a jeep trail for 2.5 miles. The workings are then downhill 400 ft.

Land Status:

Patented mining claims.

Geology of Deposit:

Country rock is Precambrian grandiorite with fine-grained plagioclase feldspar and minor quartz and biotite veinlets.

Development:

Workings consist of three short adits, an inclined shaft and two prospect pits. Adit 1 is 37 ft. long striking N27W and is caved at the face. Adit 2 is 45 ft. long with a flooded inclined winze, along the right rib at the face. Adit 3 is caved at the portal.

The inclined shaft is 5 ft. by 6 ft. with water 43 ft. below the collar. The shaft is sunk on a shear zone striking N75E and dipping 65°SE.

Pit 1 is 5 ft. x 5 ft. x 6 ft. deep. Pit 2 is 6 ft. x 5 ft. by 6 ft. deep.

Sampling:

Eigth samples were taken, five of which are continuous chip samples taken across shear and alteration zones. The three other samples (select and random grab) and taken across the various dumps.

Reserves and Property Potential:

None.

History and Production:

None.

Conclusions:

The property has virtually no potential.

Table 20. Sample Results, Joker and Rocky Mountain Bay

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-79	Select Grab	-0-	Weathered biotite schist.	N	0.2	N	N	0.02	$ 0.00
S-80	Random Grab	-0-	Dump rock, mostly fines.	N	N	N	N	0.02	0.00
S-81	Cont. Chip	2.0	Vertical gossan zone containing finely dessiminated pyrite, chalcopyrite.	N	0.4	0.19	N	0.07	7.00
S-82	do	1.5	Gossan with qtz. stringers.	N	N	0.04	N	0.31	0.00
S-83	Random Grab	0	Fe stained gossan and altered biotite schist.	0.03	0.4	0.53	N	0.38	32.00
S-84	Cont. Chip	5.0	Shear zone of altered schist.	N	0.6	0.04	N	0.11	7.00
S-85	Cont. Chip	5.0	Gossan in shear zone with qtz-biotite gneiss.	N	0.3	0.03	N	0.06	4.00
S-86	do	5.0	do.	N	0.2	0.07	0.11	0.07	4.00

Name:

Adamic Cow Camp Workings.

Base Map No.:

19.

Location:

E½ Sec. 7, T. 19 S., R. 72 W.

Elevation:

6,550 ft.

Access:

South from Parkdale on Copper Gulch Road 11 miles. Take the northwest fork in the road 1½ miles.

Land Status:

BLM-controlled surface and minerals.

Geology of Deposit:

Prospects are in an alteration zone of chloritized schist, pale to dark green, cut by granite to quartz monzonite dikes. Some pockets and a plug of chlorite-rich copper stained schist are present in a granite stock. Other discoveries are in an altered, chloritic, biotitic schist and gneiss zone located within a brecciated, feldspar-rich granite. An adit on the property cuts several alteration zones and shear zones containing quartz-rich granite, slightly garnetiferous, silica-rich gneiss and zones of soft biotite schist.

Development:

Four areas of concern on the property consist of several pits, trenches, small shafts and an adit with a winze. Area #1 consists of a single pit, 23 ft. wide bearing N34W varying from 8 to 10 ft. deep. Area #2 consists of a shaft 32 ft. deep with a circular collar 14 ft. in diameter. Area #3 consists of two small pits, 4' x 8' x 4' deep and 4 ft. in diameter by 3 ft. deep, and a trench 45 ft. long lying on a bench cut 30 ft. wide by 100 ft. long bearing N74E. Area #4 consists of an adit 66 ft. long with a winze inclined at 38°.

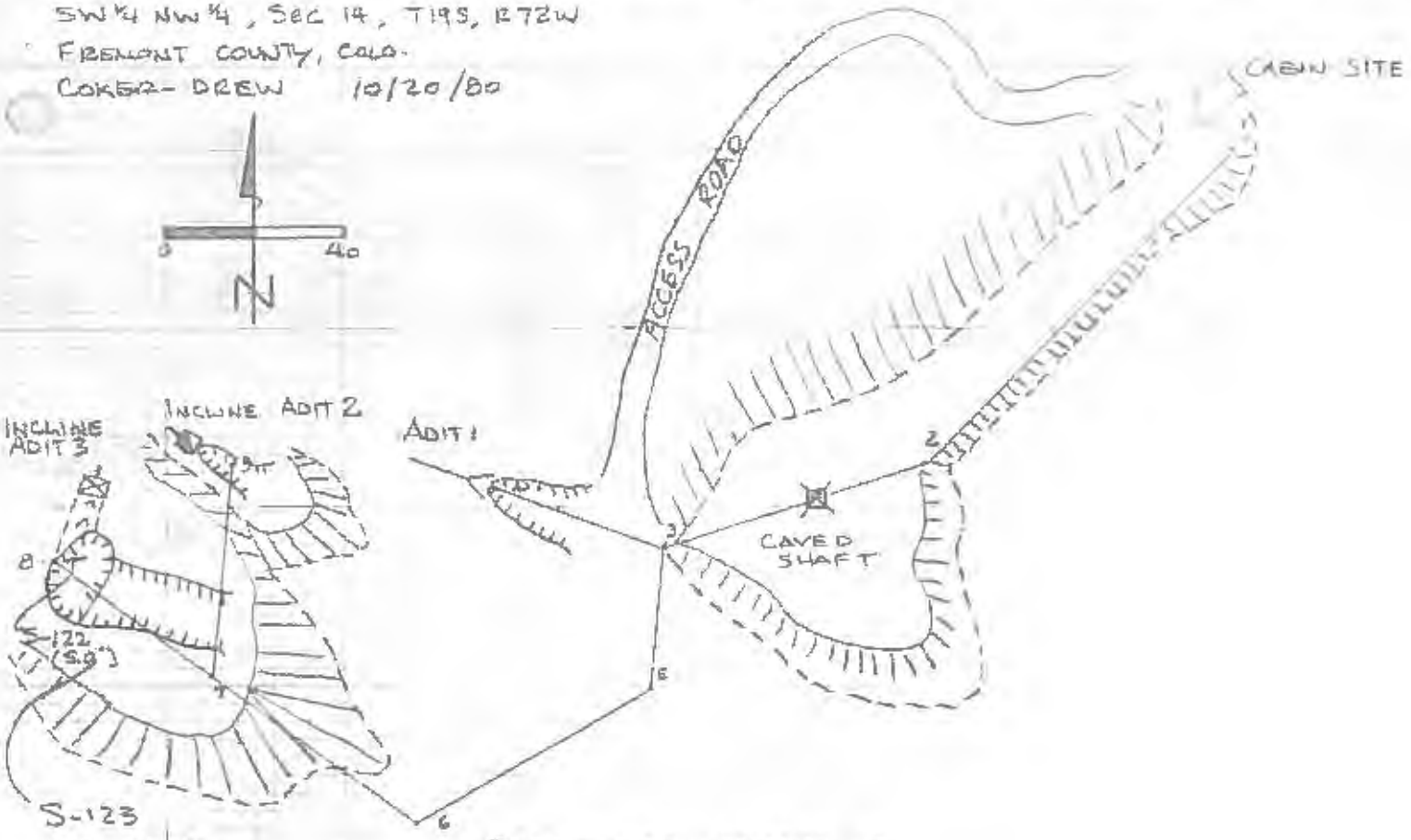
Sampling:

Nine samples were taken on the property. Eight are continuous chip samples taken across shear zones and alteration zones within the various workings. One grab sample was taken across the dump of the shaft at area #2.

SURFACE MAP

FIGURE 3

COPPER GIRL AND VALLEY VIEW
SW¼ NW¼, SEC 14, T19S, R72W
FREMONT COUNTY, COLO.
COKER-DREW 10/20/80

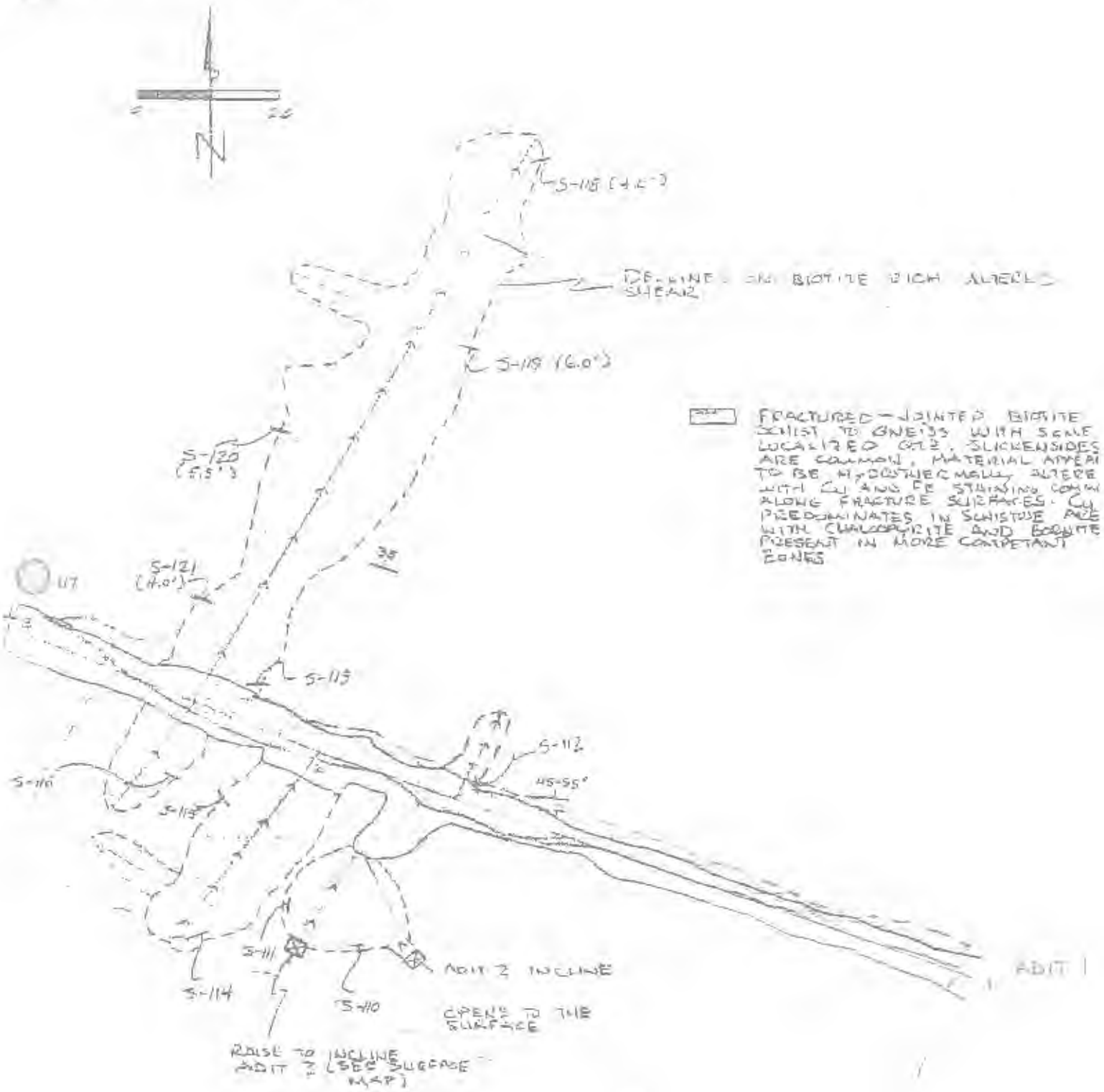


DUMP MATERIAL CONSISTS OF BIOTITE RICH Cu STAINED SCHISTS AND GNEISSES WITH SMALL AMOUNTS OF VEIN QTZ.

WORKINGS ARE DRIVEN IN A THIN ZONE OF ALTERNATING BIOTITE SCHIST AND GNEISS, LOCALLY HYDROTHERMALLY ALTERED TO KAOLINITE. DIP OF STRUCTURE VARIES BETWEEN 35° AND 45° DEGREES - DIRECTION NE. THERE IS ABUNDANT Cu STAINING (MALACHITE AND AZURITE) FOUND IN DUMP MATERIAL.

UNDERGROUND MAP

COPPER GIRL AND VALLEY VIEW



FRACTURED-JOINTED BIOTITE SCHIST TO GNEISS WITH SOME LOCALIZED QTZ. SLICKENSIDES ARE COMMON. MATERIAL APPEARS TO BE HYDROTHERMALLY ALTERED WITH CU AND FE STAINING COMMON ALONG FRACTURE SURFACES. CU PREDOMINATES IN SCHISTOSE AREAS WITH CHALCOPYRITE AND BORNITE PRESENT IN MORE COMPETANT ZONES

Name:

Temple Canyon

Base Map No.:

26.

Location:

SW¼ Sec. 10, T. 19 S., R. 71 W.

Elevation:

6,000 ft.

Access:

South from Parkdale on Copper Gulch Road 2½ miles, then turn east and go five miles to Temple Canyon Park.

Land Status:

Private surface and federal minerals.

Geology of Deposit:

Granodiorite with some pegmatite cut by a metasilicate sill.

Development:

One adit 57 ft. long bearing N82W and three pits, 40 ft. wide by 120 ft. long, 6 ft. wide by 8 ft. long and 6 ft. by 6 ft.

Sampling:

One random continuous chip cut across the sill.

Reserves and Property Potential:

None.

History and Production:

None.

Conclusions:

Property has no base or precious metal potential.

Reserves and Property Potential:

Assay results imply very little or no mineral potential and no viable reserves.

History and Production:

These claims, possibly known as Apollo and Apollo No. 1, were located by Keith Lindsey on July 29, 1977. There has been no production to date.

Conclusion

The property has no mineral potential.

Table 11. Sample Results, Adamic Cow Camp Workings

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-150	Cont. Chip	18.0	Along the face of an alteration zone.	0	.2	0	0	.02	$ 2.00
S-151	do	6.0	Across the thickness of the intersecting shear zone.	0	.2	0	0	0	2.00
S-152	Random Grab	-0-	Dump material.	0	.2	0	0	0	2.00
S-153	Cont. Chip	4.0	Taken across a 4 ft. wide shear zone.	0	.3	0	0	.02	3.00
S-154	do	2.5	Slightly garnetiferous with a 6-in. zone of soft biotite schist. At the upper contact is a 6-in wide zone of copper and iron staining.	0	.3	.35	0	.07	9.00
S-155	do	3.5	Altered biotite schist and gneiss with abundant iron and copper staining.	0	.6	1.2	0	.07	26.00
S-156	Cont. Chip	3.0	4 ft. shear zone of kaolinized schist.	0	.3	.05	0	.05	4.00
S-157	do	3.0	1 ft. zone of a granitic, altered, silica rich, garnetiferous biotite schist.	0	.5	.27	0	.09	10.00
S-158	do	4.0	Chlorite schist, iron stained and fractures are coated with calcite precipitate.	0	.2	.01	0	0	2.00

Name:

Old Cunac Property now located as Bear Nos. 1 and 2.

Base Map No.:

20.

Location:

SE¼, Sec. 7, T. 20 S., R. 71 W.

Elevation:

7,600 ft.

Access:

South from Canon City on Oak Creek Grade, a well-maintained gravel road, for 19 miles to Yorkville Site, then northwest for 5.5 miles up Bear Gulch, a strictly 4-wheel drive road, to the claim group.

Land Status:

The land and mineral estate is in the public domain. The claims lie totally within the South Grape Creek Wilderness Study Area.

Geology of Deposit:

The country rock is a fine-grained granite locally containing well-foliated biotite gneiss. Shear zones cut the country rock along foliation, striking N50W to N80W. Dip is steep to near vertical. Barite and calcite form in veins and lenses along well-developed shear zones. The barite carries occasional galena and magnetite and is heavily to lightly iron stained.

Description of Workings:

There are four shafts and four prospect pits in the claim group.

Shaft 1 has a single compartment and is caved below the 20 ft. point. A 3 ft. thick barite vein with associated galena is exposed by the west wall of the shaft. The barite is found in pockets and is not continuous along strike.

Shaft 2 is a 35 ft. deep, two-compartment, poorly timbered shaft sunk on a continuation of the barite-galena vein exposed by shaft 1.

Shaft 3 is of an undetermined depth. It is a two-compartment shaft with a large dump (1,500 tons) and a 3-5 ton stockpile of barite with magnetite and galena. This shaft is the main entry for the mine and may conceal fairly extensive underground workings.

Shaft 4 is a 4 ft. x 6 ft. x 13 ft. exploration shaft sunk in fault gouge containing large pockets of unfractured barite. West of this shaft is an area 120 ft. x 50 ft. that has been worked by a dozer.

Pit 1 is a 12 ft. x 12 ft. x 4 ft. doghole into weathered fine-grained granite and biotite gneiss. The gneiss strikes N80E and dips 29°NW.

Pit 2 is a small glory hole between shafts 1 and 2. The pit opens the barite vein and gossan zone striking N80W.

Pit 3 is a 12 ft. x 6 ft. exploration cut in a friable kaolinized zone. The pit attempted to locate the barite vein between shafts 2 and 3.

Pit 4 is a large cut into the hillside below shaft 4. It opens a fine-grained pink rhyolite to granite that is weathered and locally altered to kaoline.

Sample Analyses and Description:

Sample 71--Float material from pit 1.

Sample 72--4 ft. continuous chip in pit 1 across fine-grained granite and biotite gneiss.

Sample 73--4 ft. continuous chip across gossan zone carrying 2 ft. of vein barite and galena in pit 2.

Sample 74--Dump grab from around shafts 1 and 2. Material is altered gneiss and gossan carrying a trace of pyrite.

Sample 75--3 ft. continuous chip across iron-stained kaolinized fault gouge in pit 3.

Sample 76--Dump grab from stockpiles around shaft 3. Material is predominantly barite with magnetite and galena.

Sample 77--5 ft. continuous chip across shear zone at the face of pit 4. Rock is fractured kaolinized fault gouge totally lacking any gossan.

Sample 78--5 ft. continuous chip across zone of fault gouge and iron stained fault breccia at collar of shaft 4. Galena occurs in small crystals throughout unfractured barite lenses.

Mine Reserves:

Depending on the subsurface (inaccessible) workings up to 1,500 tons of barite-galena ore material may be inferred from surface expressions. As noted in part 5, the dump surrounding shaft 3 indicates extensive underground development and/or stoping. Consequently, deeper deposits may be worked out, which would leave only weathered near surface deposits of low-grade and tonnage. This property is the largest barite-galena

deposit found in the Grape Creek area. The existence of this deposit would indicate the possibilities of other similar ore bodies south of Bear Gulch.

History and Production:

The claims were staked on October 10, 1977 as the Bear Nos. 1 and 2 by Keith Lindsey. There is no recorded production for this property.

Conclusions:

From sample analysis of superficial exposures, this property has little to no potential for base or precious metal development. The barite near the surface is of poor quality and has limited potential for industrial application. Deep drilling may delineate higher quality barite that if found in significant quantity could prove marginally economical.

Table 22. Sample Results, Old Conac Property (Bear Claims Nos. 1 and 2)

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-71	Select Grab	-0-	Float material composed of hard qtz gneiss with traces of malachite.	N	0.5	0.13	0.10	0.18	$ 7.10
S-72	Cont. Chip	4.0	Across fine-grained granite and biotite gneiss.	N	0.2	N	N	0.01	0.00
S-73	do.	4.0	Across gossan carrying barite.	N	0.4	N	N	0.10	4.00
S-74	Select Grab	-0-	Altered gneiss and gossan carrying traces of pyrite.	N	0.4	N	0.33	0.06	6.70
S-75	Cont. Chip	3.0	Fe stained, kaolinized fault gouge with traces of galena.	N	0.6	N	1.6	0.08	18.80
S-76	Select Grab	-0-	Dump material of barite with magnetite and galena.	N	0.5	0.01	0.44	0.08	6.50
S-77	Cont. Chip	5.0	Fractured, kaolinized shear.	N	N	N	N	0.01	0.00
S-78	do.	5.0	Fault gouge and Fe stained fault breccia.	N	0.1	0.08	0.93	0.21	8.40

Name:

Morning Star Working.

Base Map No.:

21.

Location:

N½ Sec. 25, T. 18 S., R. 72 W.

Elevation:

6,480 feet.

Access:

South from Parkdale on Copper Gulch Road 3¼ miles, then west 2 miles up drainage.

Land Status:

Bureau of Land Management Surface and Mienral.

Geology of Deposit:

Biotite rich, copper stained, altered schists and gneisses with some fine-grained granite. Kaolinized in places with isolated quartz stringers and shows of secondary copper coatings and fracture filling. Some scattered garnet occurs in a quartz and feldspar groundmass.

Development:

Three distinct sites consisting of five workings. Site #1 has a timbered shaft 45 ft. deep. Site #2 has one adit 21 feet long bearing N85W and one trench 16 ft. long. Site #3 consists of a two-compartment shaft 28 ft. deep with a 10 drift at the bottom bearing N38E and a pit 7 ft. x 12 ft. Site #4 consists of one adit 19 ft. long bearing N75W and a dump 22 ft. long. Site #5 consits of three bench cuts of varying size and shape.

Sampling:

Seven continuous chip samples were taken in the various workings across zones of alteration.

Two grab samples taken from dumps where chip sampling was impractical.

Reserves and Property Potential:

No viable reserves and no potential.

History and Production:

The Morning Star claims nos. 1-12 were located between July, 1943, and May, 1957, by the Morning Star Mining Comapny. The claims were relinquished and subsequently relocated by the Gold Depository Company May 7, 1981.

There is no reported production.

Conclusions:

Sample results indicate the property is not valuable for base or precious metals.

Table 23. Sample Results, Morning Star Mines

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-159	Cont. Chip	5.0	Altered, copper stained, soft biotite schist.	N	0.3	0.46	N	0.17	$12.00
S-160	do	3.0	Kaolinized, copper stained schist.	N	0.3	1.9	N	0.71	33.40
S-161	do	2.0	Across a Fe stained biotite schist laterally grading into competent Fe stained gneiss.	N	0.3	0.02	N	0.02	3.00
S-162	Select Grab	-0-	Dump material of schists and gneiss fragments.	N	0.4	0.01	N	N	4.00
S-163	Cont. Chip	2.5	Across white to buff kaolinized shear gouge.	N	0.3	N	N	N	0.00
S-164	do	3.0	do.	N	0.3	N	N	0.01	0.00
S-165	Select Grab	0	Biotite gneiss and siliceous fine- to medium-grained granodiorite.	N	0.3	N	N	N	0.00
S-166	Cont. Chip	3.0	Feldspar pegmatite.	N	0.1	N	N	N	0.00
S-167	do	5.0	do.	N	0.3	N	N	N	0.00

Name:

Upper Copper Gulch, claim group name, if any, unknown.

Base Map No.:

22.

Location:

SW¼ Sec. 36, T. 18 S., R. 72 W.

Elevation:

6,480 feet

Access:

South from Parkdale on Copper Gulch Road 1 3/4 miles, then ¼ mile north of the road.

Land Status:

State-owned land.

Geology of Deposit:

Iron stained granodiorite and biotite rich schist some hydrothermally altered with kaolinized shear zones showing signs of copper and iron staining and isolated copper oxide fracture filling. Shear zone also contains isolated calcite stringers and quartz stringers with anhydrite precipitate on the shear surface.

Development:

The workings consist of one adit bearing N42E for 24 ft., then forking, with each fork continuing for 46 feet, and one inclined shaft 20 feet deep bearing N60E.

Sampling:

Five continuous chip samples across kaolinized shear zones and altered wall rock.

One random grab sample taken at the shaft dump.

Reserves and Property Potential:

No viable reserves in evidence and no indication of significant potential.

Name:

Sand Gulch Prospect #2.

Base Map No.:

28.

Location:

SW¼SW¼ Sec. 8, T. 48 N., R. 12 E.

Elevation:

7,600 ft.

Access:

North from Cotopaxi on Bernard Creek Road 1.5 miles to the Sand Gulch Cutoff. Follow the right road at the fork which ends at the prospect.

Land Status:

Federally-controlled surface and minerals.

Geology of Deposit:

Sodic feldspar in a pegmatite with a medium-grained granite as host rock. The surface is weathered and on the north wall the pit is cut by an altered biotite schist.

Development:

One large pit, horseshoe shaped with a west leg 80 ft. long and an east leg 150 ft. long.

Sampling:

One continuous chip sample taken across a light green to white quartz, sodic feldspar and granite zone.

Reserves and Property Potential:

None.

History and Production:

None.

Conclusions:

Assay very minor traces of base and precious metals. This is an old stone pit, previously used for decorative stone and gravel.

Name:

South Fremont County Patented Prospects (actual name unknown).

Base Map No.:

29.

Location:

NE¼ Sec. 32, T. 20 S., R. 71 W.

Elevation:

7,600 ft.

Access:

Travel 21 miles south of Canon City on the Oak Creek Grade, a well-maintained, gravel road, then turn due west on an unimproved dirt road for 2.5 miles to the vicinity of the claims.

Land Status:

Patented land surrounded by federal land.

Geology of Deposit:

The country rock is a biotite gneiss with foliation striking N35E and numerous shear zones. In the first pit a cross shear strikes N60W with thin quartz stringers in a highly kaolinize, chlorite-rich gouge. In the shaft a shear zone is present consisting of 1 ft. of chloritized, kaolinized gouge, 2 in. of quartz with minor copper and iron staining, 4 in. of chlorite schist, 1 ft. of chlorite gouge, and 1 ft. of silica-rich, dendritic wall rock showing minor copper staining. In prospect 3, the country rock contains an abundance of large barite crystals with small stringers of hematite. Dump material is an iron-stained, fine-grained granite or granodiorite.

Development:

The workings consist of one shaft 3 ft. x 6 ft. x 56 ft. deep and 3 small pits. Pit 1 is circular, 8 ft. in diameter and roughly 5 ft. deep. Pit 2 is also circular, 3 ft. in diameter and about 1 ft. deep. Pit 3 is 18 ft. x 18 ft. x 10 ft. deep.

Sampling:

Four continuous chip samples were taken across the shear zones. Sample no. 141 was taken across the barite vein.

Reserves and Property Potential:

None.

History and Production:

None.

Conclusions:

Property contains none of the minerals being investigated.

History and Production:

None.

Conclusions:

Sample results indicate the property is not viable for base or precious metals.

Table 24. Sample Results, Upper Copper Gulch

[N, Not Detected; Tr, Trace]

Sample No.	Type	Length (Ft)	Description	Assay Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	Value $/Ton
S-143	Cont. Chip	7.5	Highly kaolinized shear zone, biotitic @ contact with country rock.	N	0.3	0.08	N	0.45	$ 7.00
S-144	do	3.5	Biotite rich gneiss and thin interbeds of schist.	N	0.4	0.02	N	0.03	4.00
S-145	do	2.5	Fe stained gouge and altered wall rock with						

Name:

Hellgate Claims Nos. 1 thru 12.

Base Map No.:

23.

Location:

NE¼, Sec. 20, T. 20 S., R. 71 W., and S½, Sec. 17, T. 20 S., R. 71 W.

Elevation:

7,600 ft.

Access:

Nineteen miles south to southwest of Canon City on Oak Creek Grade, a well-maintained gravel road. Then northwest from Yorkville site on Bear Gulch road, a 4-wheel drive way, for 1 mile to Hellgate Gulch. Then west on Hellgate gulch for 4 miles to the westernmost claim.

Land Status:

The land is generally private surface and federal mineral estate. There are no patented mining claims in the area.

Geology of Deposit:

These claims are within a zone of barite-calcite rich aphanitic granite country rock. Barite occurs as small lenticular veins and pods having some very minor amounts of associated sulphides, principally galena. Local shear zones cut the country rock in a southeasterly or northeasterly direction. The shears are locally enriched with biotite schist which is often hydrothermally altered.

Development:

There are three small shafts, 3 prospect pits, a long dozer cut and a large-scale 4 bench open pit in the area.

Shaft 1 is 4 ft. x 8 ft. x 20 ft. sunk in fine-grained granite with veinlets of barite.

Shaft 2 is 4 ft. x 6 ft. x 19 ft. sunk in the same rock type.

Shaft 3 is 4 ft. x 6 ft. x 17 ft. also sunk in granitic country rock bearing thin veins of barite.

Pit 1 is 12 ft. long x 6 ft. wide x 4 ft. deep. It opens a 5.5 ft. wide zone of calcite and barite in altered country rock.

Pit 2 is 17 ft. x 6 ft. x 3 ft. deep in slightly altered country rock.

Pit 3 is 10 ft. x 6 ft. x 3 ft. deep opening a zone of barite in biotite schist.

The dozer cut is approximately 94 ft. long and up to 12 ft. wide. Its depth is generally less than 4 ft.

The open pit is located at the mouth of Hellgate Gulch. It is a series of 4 cuts that angle uphill for approximately 250 ft. The average bench height is 18 ft. The total disturbed area is roughly 1.4 acres. The benches are cut into a moderately dipping biotite-rich weathered schist.

Sampling:

Sample 49--This was a selected grab of stockpile material from shaft 1. The rock is iron-stained, biotite-rich rhyolite to gneiss with some gossan. It is rich in barite and calcite.

Sample 50--5.5 ft. continuous chip across a shear zone in pit 1 filled with calcite and barite-rich schist and gossan.

Sample 51--3 ft. continuous chip in pit 3 across barite-rich biotite gneiss.

Sample 52--Selected grab of barite and calcite rich dump material from shaft 2.

Sample 53--Grab sample from dozer cut 1 of biotite-rich weathered schist intermingled with coarse-grained granite.

Sample 54--1.5 ft. continuous chip samples across a barite-calcite vein at the collar of shaft 3.

Sample 55--7 ft. continuous chip cut across a nearly vertical vein of barite-rich biotite schist in open pit 1.

Sample 56--3 ft. continuous chip across vertical structure on bench 2 of open pit 1.

Sample 57--3 ft. continuous chip across dipping biotite-rich weathered schist on bench 3 of open pit 1.

Mine Reserves:

The Hellgate claims and Hellgate Gulch open pit total in excess of 500 tons of low-grade barite ore. The barite has impurities and high

transportation costs that make it marginal. The barite has no associated base or precious metals to increase its inherent value.

History and Production:

The area was restaked October 24, 1980 by Gerald L. Jensen of Petro Silver, Inc.

There is no known production from this area.

Conclusions:

This area has little potential for barite production since there are large areas of much higher grade barite in other areas of the west. The silver content is generally less than 0.5 ounces per ton.

Table 25. Sample Results, Heilgate Claims, Nos. 1-12

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-49	Select Grab	-0-	Fe stained biotite gneiss in contact with buff to red rhyolite.	0.02	0.1	0.01	N	0.51	$12.10
S-50	Cont. Chip	5.0	Shear zone of calcite, barite and gossan.	N	0.2	0.01	N	0.12	2.00
S-51	do	3.0	Barite-rich veins in a biotite gneiss.	N	0.5	N	N	0.02	5.00
S-52	Select Grab	-0-	Barite and calcite from stockpile.	N	0.1	N	N	0.03	0.00
S-53	do	-0-	Dozer cut in weathered biotite schist and granite.	N	0.3	N	N	0.02	3.00
S-54	Cont. Chip	1.5	Barite-calcite vein.	N	0.2	N	N	0.02	2.00
S-55	do	7.0	Barite injected biotite schist.	N	0.3	N	N	0.01	3.00
S-56	do	3.0	Biotite schist in vertical shear.	N	0.3	N	N	N	3.00
S-57	do	3.0	do.	N	0.4	N	N	0.01	4.00

Name:

Marsh Gulch Prospects.

Base Map No.:

24.

Location:

SW¼SW¼, Sec. 5, T. 19 S., R. 71 W.

Elevation:

6,480 ft.

Access:

South from Parkdale on Copper Gulch Road 11 miles take northwest fork of the road 1½ miles, then south ½ mile at the next fork.

Land Status:

Federally-controlled surface and minerals.

Geology of Deposit:

The rock is a remnant of the Dakota, having thinly bedded shales and siltstones grading into a massive buff to gray colored claystone with some iron staining. The strata strike N22W and dip 43° to the NE.

Development:

Workings consist of one trench and one short adit. The trench is 6 ft. wide by 50 ft. long and varies in depth from 0 to 8 ft., bearing N75E.

The adit is 15 ft. long on the same bearing as the trench.

Sampling:

One random grab sample was taken across the dump north of the trench.

Reserves and Property Potential:

None.

History and Production:

None.

Conclusions:

The property shows no evidence of significant mineralization and could not profitably produce valuable metals.

Table 26. Sample Results, Marsh Gulch Prospects

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-131	Select Grab	-0-	Thinly bedded shales and siltstones.	N	0.2	0.05	N	0.01	$3.00

Name:

Poverty Mountain Road Prospect, claims, if any, unknown.

Base Map No.:

25.

Location:

NW¼ Sec. 7, T. 19 S., R. 72 W.

Elevation:

7,360 feet.

Access:

South from Parkdale on Copper Gulch Road 11 miles to Poverty Mountain Road, then northwest 1 3/4 miles.

Land Status:

BLM-controlled land.

Geology of Deposit:

Resistant knob of iron-stained, altered to slightly altered granodiorite, brecciated and siliceous in places. Area is cut by a kaolinized, biotite-rich shear zone, altered and iron stained.

Development:

Workings consists of one trench 58 feet long bearing N58E and an exploration pit 4 feet in diameter.

Sampling:

One continuous chip sample was taken across the alteration zone in the trench.

Reserves and Potential:

None.

History and Production:

None.

Conclusions:

No evidence of value.

Table 27. Sample Results, Poverty Mountain Road Prospect

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-149	Cont. Chip	3.0	Alteration zone of kaolinized biotite rich schist.	-0-	.3	-0-	-0-	.01	$3.00

Table 28. Sample Results, Temple Canyon

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-142	Cont. Chip	4.0	Metasilicate sill overlain by magmatic granodiorite.	-0-	.3	-0-	-0-	.01	$3.00

Name:

War Dance Claims.

Base Map No.:

27.

Location:

E½ Sec. 20, T. 19 S., R. 72 W.

Elevation:

7,600 feet.

Access:

South from Parkdale on Copper Gulch Road 14 miles, then east on jeep trail 1 mile.

Land Status:

Privately-owned land.

Geology of Deposit:

Altered and unaltered biotitic schist and gneiss, highly fractured and jointed with minor quartz present. The country rock is a coarse-grained, pegmatitic quartz monzonite containing a kaolinized zone.

Development:

Workings consist of three small shafts, two trenches, and one small pit. Shaft #1 is 6 ft. deep, #2, 14 ft. deep and #3, 32 ft. deep. Trench #1 is 78 ft. long, bearing N78E. Trench #2 is 30 ft. long, bearing E-W.

Sampling:

Four continuous chip samples were taken in kaolinized and altered zones and one random grab was taken across the dump at pit #1.

Reserves and Potential:

None.

History and Production:

None.

Conclusions:

Sample assays indicate no viable metal concentrations.

Table 29. Sample Results, War Dance Claims

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-105	Cont. Chip	3.0	Biotitic schist with quartz stringers.	-0-	-0-	.03	-0-	.43	$ 3.00
S-106	do	8.0	do.	-0-	-0-	.02	-0-	.33	2.00
S-107	do	5.0	Kaolinized shear zone striking N78E and dipping 85°SE.	-0-	.3	.02	-0-	0.03	3.00
S-108	do	3.0	Across thickness of alteration zone.	-0-	.4	.01	-0-	.01	4.00
S-109	Random Grab	-0-	Dump material, gossany hydrothermally altered.	-0-	.2	-0-	-0-	.02	2.00

Table 30. Sample Results, S. Fremont County Patented Prospects

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-138	Cont. Chip	3.5	Well-defined foliation in a qtz-biotite gneiss.	N	0.1	N	N	0.06	$ 0.00
S-139	do	6.0	Across shear zone of kaolinized gouge with minor Cu and Fe staining.	N	0.1	0.06	N	0.01	0.00
S-140	do	2.5	do.	N	0.2	0.13	N	0.02	4.00
S-141	do	2.5	White to red barite vein in medium-grained granodiorite.	N	0.1	N	N	0.01	0.00

Name:

Democratic Mountain-Epidote Cut.

Base Map No.:

30.

Location:

NE¼SW¼ Sec. 34, T. 20 S., R. 73 W.

Elevation:

8,040 ft.

Access:

South from Texas Creek on State Highway 69 15.5 miles to Reed Gulch. Follow the main road north 2 miles. The property is 1 mile due east on foot.

Land Status:

Privately-owned surface and minerals.

Geology of Deposit:

Highly siliceous and epidote injected quartzite. The quartzite has undergone low-grade contact metamorphism which has initiated quartz crystal regrowth. Epidote is quite prevalent along with a small amount of granitic injection.

Development:

One quarry, roughly semicircular, opening toward the northeast. The radius of the quarry is 75 ft. and the highwall is 52 ft.

Sampling:

No samples taken.

Reserves and Property Potential:

The property may have some value as a rock quarry.

History and Production:

None for base or precious metals.

Conclusions:

The property is not valuable as a source of base or precious metals.

Name:

Devil's Hole.

Base Map No.:

31.

Location:

NW¼SW¼ Sec. 30, T. 18 S., R. 73 W.

Elevation:

7,600 ft.

Access:

North from Texas Creek 2 miles on Texas Creek Gulch, then right for 2½ miles to a road heading NW. The property is a quarry ¼ mile down the road on the north side.

Land Status:

Federally-controlled surface and minerals.

Geology of Deposit:

Country rock is a gneiss with abundant mica books, rose quartz and beryl crystals up to 1 ft. in diameter.

Development:

The workings consist of one small adit, an inclined shaft, and several trenches connected to a large open pit quarry.

Sampling:

No samples were taken due to the fact the operation was obviously a quarry concerned with removing pegmatites.

Reserves and Property Potential:

None.

History and Production:

None.

Conclusions:

This property is not valuable as a source of base or precious metals.

Name:

East Gulch Texas Creek Properties.

Base Map No.:

32.

Location:

W½SE¼ Sec. 19, T. 18 S., R. 73 W.

Elevation:

8,120 ft.

Access:

North from Texas Creek 2 miles on Texas Creek Gulch Road to the first fork. Follow the right fork 2.5 miles to a second fork. Follow the right fork 1 mile to the properties.

Land Status:

Federally-controlled surface and minerals.

Geology of Deposit:

East Gulch #1 is a pegmatite zoned with rose quartz, microcline, potassium feldspar and mica. Large quartz crystals intergrown with feldspar crystals are quite common with some feldspar aggregates 3 ft. in diameter. The main excavation follows a large central core of rose quartz stained with both iron and manganese oxides.

East Gulch #2 is in a country rock consisting of granite, granodiorite and gneiss which has been intruded by quartz stringers. Within the quarry itself is a pegmatite containing crystals of quartz, feldspar and biotite with manganese dendrites on the quartz and small books of mica randomly scattered throughout the zone. Small amounts of black tourmaline crystals are also present.

East Gulch #3 is in an outcrop of orthoclase, pegmatite, white coarse-grained quartz, tourmaline crystals and small books of mica scattered throughout.

Development:

The workings consist of three open pit quarries cut into the hillside for purposes of extracting pegmatite.

Sampling:

No samples taken on the property.

Reserves and Property Potential:

None.

History and Production:

None.

Conclusions:

The property is not valuable as a source of precious or base metals.

Name:

East Pierce Gulch.

Base Map No.:

33.

Location:

SE¼NW¼, Sec. 7, T. 20 S., R. 71 W.

Elevation:

7,760 ft.

Access:

Southwest from Canon City 19 miles by way of Oak Creek Grade, then west onto the trail down Bear Gulch followed 4 miles to Grape Creek, then 1.6 miles up East Pierce Gulch to the site.

Land Status:

The prospect is on federally-controlled surface and minerals.

Geology of Deposit:

The country rock is fine-grained Precambrian quartz monzonite. Granite with abundant biotite grades laterally into a quartz-biotite gneiss. There is a fractured gouge-gossan zone of iron-stained sheared and altered country rock trending N66W.

Development:

The only working is an 85 ft. long cut into the hillside just above East Pierce Gulch trending N66W.

Sampling:

Two continuous chip samples were taken. One was taken across the gossan-gouge zone and the other across the true thickness of the cut.

Reserves and Property Potential:

None.

History and Production:

None.

Conclusions:

This property has no potential for base or precious metals.

Table 31. Sample Results, East Pierce Gulch

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-87	Cont. Chip	3.5	Fractured, gouge-gossan zone and Fe stained sheared fine-grained granite and biotite-chlorite schist.	N	0.2	N	N	0.02	$0.00
S-88	do	2.2	do.	N	0.2	N	N	0.03	$0.00

Name:

Five Pt. Gulch Quarries and Adit.

Base Map No.:

34.

Location:

Near the center of the section line between Sections 27 and 28, T. 19 S., R. 73 W.

Elevation:

7,600 ft.

Access:

South from Texas Creek on State Highway 69 for 4 miles, then east on Rogers Gulch 6 miles, then north at the intersection 2 miles. The properties are 0.25 miles north of the road.

Land Status:

Privately-owned surface and minerals.

Geology of Deposit:

Quarry 1 is cut in plagioclase feldspar, quartz, orthoclase and biotite. The center of the highwall is cut by a 10-in. schistose dike trending NW.

Quarry 2 cuts through a coarse-grained, feldspar-rich granodiorite, and a zone of greenstone and chlorite-rich gneiss.

Development:

Workings consist of: One quarry roughly horseshoe shaped, 100 ft. long in the N-S direction, 60-ft. wide with a 30-ft. highwall; one small quarry 8 ft. wide x 18 ft. long bearing N58E with a 15-ft. highwall; one small pit 6 ft. x 3 ft. X 8 ft.; one adit, timbered at the portal, bearing N60E for 100 ft., then forking N12W for 89 ft. and N87E for 65 ft., then shifting to N69E for 24 additional feet.

Sampling:

One random chip sample taken in the left rib of the left fork of the adit.

Reserves and Property Potential:

None.

History and Production:

None.

Conclusions:

Property is not valuable as a source of precious or base metals.

Name:

McClure Complex.

Base Map No.:

35.

Location:

SW¼ Sec. 33, T. 20 S., R. 73 W.

Elevation:

8,000 ft.

Access:

South from Texas Creek on State Highway 69 for 15.5 miles to Reed Gulch. Follow the main road 2 miles and the working are on both sides of the road.

Land Status:

Privately-owned surface and minerals.

Geology of Deposit:

The country rock is hydrothermally altered, biotite rich gneiss and schist. Pods and lenses of vermiculite are very common in the area. Pit 4 is sunk in a highly iron-stained, vesicular, calcite-rich zone. Iron, in the form of hematite and limonite, calcite and quartz stringers are also numerous in the highly vesicular sections of the deposit.

Development:

The complex consists of four pits. Pit 1 is a bell-shaped 110 ft. along its long axis and 50 ft. wide. Pit 2 is roughly circular, 100 ft. in diameter. Pit 3 is oblong, 160 ft. long bearing N60E. Pit 4 is a series of small pits.

Sampling:

One chip channel sample was taken from one of the smaller pits of Pit 4, taken in a vesicular, calcite-veined, biotite-rich zone.

Reserves and Property Potential:

None.

History and Production:

None.

Conclusions:

The property is not valuable as a source of base or precious metals.

Name:

North Talbert Gulch.

Base Map No.:

36.

Location:

SW¼ Sec. 24, T. 20 S., R. 72 W.

Elevation:

8,100 ft.

Access:

South from Parkdale 11 miles on Copper Gulch Road, then .2 miles north of Talbert Gulch.

Land Status:

Private land.

Geology of Deposit:

The country rock is fine-grained gneiss alternating with coarser-grained granite. The shear zone strikes N65W and dips 47° south. It is 9 ft. wide and comprised of biotite-rich gouge with some localized white quartz inclusions.

Another shear zone, cut by a pit, strikes N60E and is vertical. The footwall of the zone is quartz monzonite and the hanging wall is vesicular rhyolite. The entire shear is highly brecciated and kaolinized.

Development:

The workings consists of two small pits. Pit 1 is on the east side of Copper Gulch, 14 ft. wide and dug back to a depth of 9 ft. into the gulch.

Pit 2 is on the west side of the gulch, 12 ft. wide dug back 14 ft.

Sampling:

One continuous chip sample was taken across the shear-gouge in Pit 2 and one random grab was taken from the dump at Pit 1.

Reserves and Property Potential:

None.

History and Production:

None.

Conclusions:

This property has no apparent potential.

Table 32. Sample Results, North Talbert Gulch

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-90	Random Grab	-0-	Dump material of qtz monzonite, in parts brecciated and/or kaolinized.	N	0.3	N	N	N	$0.00
S-91	Cont. Chip	9.0	Biotite rich gouge with local milky qtz inclusions.	N	0.1	N	N	N	$0.00

Name:

Red Mountain Prospect.

Base Map No.:

37.

Location:

Secs. 19 and 30, T. 20 S., R. 72 W.

Elevation:

7,548 ft.

Access:

South from Parkdale 18 miles on Copper Gulch Road, then east 1 mile on a jeep trail.

Land Status:

Privately-owned surface.

Geology of Deposit:

The rock consists of biotite-chlorite-rich schist, fine-grained granite and gneiss. Some epidote is present, as well as light gray-green staining.

Development:

Workings consist of three small pits ranging in size from 10 ft. to 20 ft. in diameter and up to 6 ft. in depth.

Sampling:

One random grab sample was taken off the dump of the largest pit.

Reserves and Property Potential:

None.

History and Production:

None.

Conclusions:

This property has no mineral potential for base or precious metals.

Table 33. Sample Results, Red Mountain Prospect

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-89	Random Grab	-0-	Biotite-chlorite rich schist, fine-grained granite and gneiss, some epidote.	N	0.2	N	N	N	$0.00

Name:

Talbert Gulch

Base Map No.:

38.

Location:

SW¼NE¼, Sec. 28, T. 19 S., R. 72 W.

Elevation:

7,572 ft.

Access:

South from Parkdale on Copper Gulch Road 14 miles, then east 1½ miles on Talbert Gulch.

Land Status:

Private surface, BLM minerals.

Geology of Deposit:

Iron-stained gneiss.

Development:

One small shaft 20 ft. deep.

Sampling:

One random grab sample from the shaft dump.

Reserves and Property Potential:

None.

History and Production:

None.

Conclusions:

The property has no mineral potential.

Table 34. Sample Results, Talbert Gulch

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-113	Random Grab	-0-	Dump material of iron stained gneiss.	0	0	.02	0	0	$0.00

Name:

Dirty Gulch (Copper Prince).

Base Map No.:

39.

Location:

NE¼ Sec. 36, T. 49 N., R. 11 E.

Elevation:

7,890 ft.

Access:

North from Cotopaxi 6 miles on Bernard Creek Road to the mine access road on the west side of Bernard Creek.

Land Status:

Patented mining claims.

Geology of Deposit:

The shaft is flooded so the only geologic information available is from the dump material which is a biotite gneiss containing copper in relatively high concentrations.

Development:

One shaft, completely flooded.

Sampling:

One select grab sample across the dump.

Reserves and Property Potential:

Evaluation impossible due to the condition of the shaft.

History and Production:

The property is probably the Copper Prince Mine which, in 1907, shipped 74 tons of ore containig 47 oz. of silver and 17,000 lbs. of copper.

Conclusions:

This property could have some potential as a copper-silver mine, but in its present flooded conditon proper evaluation is not possible.

Table 35. Sample Results, Dirty Gulch (Copper Prince)

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-180	Select Grab	-0-	Dump material containing copper (malachite) in a well-foliated qtz-biotite gneiss.	N	2.6	8.1	N	N	$155.60

Name:

West McCoy Gulch.

Base Map No.:

40.

Location:

NE¼SE¼ Sec. 5, T. 47 N., R. 12 E.

Elevation:

6,800 ft.

Access:

West from Texas Creek on Highway 50 3½ miles, then south 4 miles on Sand Gulch Road. The property is 200 ft. west of the road.

Land Status:

Federally-controlled surface and minerals.

Geology of Deposit:

Copper-rich, coarse-grained granodiorite. The copper oxide is interstitual. Small isolated blebs of chalcopyrite accompany the more siliceous rock which is generally iron stained.

Development:

One small pit 6 ft. deep.

Sampling:

One select grab sample from the dump area.

Reserves and Property Potential:

None.

History and Production:

None.

Conclusions:

Even though the sample assay is very high, the high-grade rock appears to have been removed as the pit wall is barren of mineralization.

Table 36. Sample Results, West McCoy Gulch

[N, Not Detected; Tr, Trace]

Sample				Assay					Value
No.	Type	Length (Ft)	Description	Au (oz/ton)	Ag (oz/ton)	Cu (%)	Pb (%)	Zn (%)	$/Ton
S-178	Select Grab	-0-	Cu rich, coarse-grained granodiorite. Copper oxide is interstitial; some chalcopyrite present.	N	0.3	9.4	N	N	$153.00